CLEARWATER PROGRAM

Environmental Impact Report/ Environmental Impact Statement

FINAL

SCH# 2008101074

November 2012

U.S. Army
Corps of Engineers

SANITATION DISTRICTS OF LOS ANGELES COUNTY

ICF INTERNATIONAL

CLEARWATER PROGRAM

Environmental Impact Report/ Environmental Impact Statement

FINAL

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State Clearinghouse Number: 2008101074

November 2012

Also Available at:

www.ClearwaterProgram.org

CLEARWATER
Program

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Chapter 1
INTRODUCTION

The Sanitation Districts of Los Angeles County (Sanitation Districts) prepared the Clearwater Program Master Facilities Plan (MFP), available under separate cover, to meet the wastewater management needs of the Joint Outfall System (JOS) through the year 2050. This chapter presents (1) introductory and background information for the MFP, (2) the lead agencies preparing this joint environmental impact report/environmental impact statement (EIR/EIS) – the Sanitation Districts and the United States (U.S.) Army Corps of Engineers (Corps), and (3) the scope and content of the EIR/EIS.

This EIR/EIS was prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) (California Public Resources Code [PRC] Section 21000 et seq.) and the Guidelines for Implementation of the California Environmental Quality Act of 1970 (CEQA Guidelines) (14 California Code of Regulations [CCR] Section 15000 et seq.). The document also meets the requirements of the National Environmental Policy Act (NEPA) (42 United States Code [USC] Section 4321 et seq.) in conformance with the Council for Environmental Quality Regulations for Implementing NEPA (40 Code of Federal Regulations [CFR] Part 1500 et seq.) and the Corps' NEPA Implementation Procedures (33 CFR Part 325, Appendix B). The Sanitation Districts are the CEQA lead agency, and the Corps is the NEPA lead agency. This EIR/EIS has been prepared by ICF International under contract to the Sanitation Districts and has been independently reviewed by the Sanitation Districts and Corps staff. The scope of the document, methods of analysis, and conclusions represent the independent judgment of the Sanitation Districts and the Corps. Staff members from the Sanitation Districts, Corps, and ICF International who helped prepare this EIR/EIS are identified in Chapter 26.

This EIR/EIS describes the affected environmental resources and evaluates the potential impacts to those resources as a result of constructing and operating the *recommended plan* identified in Chapter 7 of the MFP. The term *recommended plan* in this document is used in the same way as *proposed project* in CEQA and *proposed action* in NEPA. The recommended plan and the alternatives are described in detail in Chapter 3. This EIR/EIS will be used to inform decision makers and the public about the environmental effects of the Clearwater Program.

1.1 Clearwater Program

The Sanitation Districts comprise 23 independent special districts responsible for the wastewater and solid waste management needs of 78 cities and unincorporated territory in Los Angeles County. The Sanitation Districts' service area, encompassing approximately 820 square miles, is shown on Figure 1-1. Seventeen of the independent districts participate in a cooperative agreement to operate and maintain a regional interconnected system of wastewater and treatment facilities known as the JOS. Improvements to the JOS are the subject of this EIR/EIS. The location of the JOS and existing treatment facilities within the JOS are identified on Figure 1-2. A detailed description of the JOS is provided in Chapter 2.

The Clearwater Program is the Sanitation Districts' comprehensive planning and engineering effort to provide cost-effective and environmentally sound wastewater management services and recycled water supply for the JOS through the year 2050. The Clearwater Program entails the preparation of a new MFP,

which will guide the development and management of the Sanitation Districts' infrastructure; the preparation of this EIR/EIS; and the design and construction of the recommended facilities. New facilities and upgrades that are required to accommodate projected future conditions within the JOS service area, including aging infrastructure, anticipated growth within the system, emerging demands for recycled water, and potential new regulatory requirements, were evaluated in the MFP.

A wide range of alternatives were analyzed in the MFP to ensure the continuation of a wastewater collection, treatment, effluent management, and biosolids management system that is protective of human health and the environment. This EIR/EIS assesses the potential environmental impacts of construction and operation of the final feasible alternatives identified in the MFP, including the recommended plan, and specifies appropriate mitigation measures.

1.1.1 Clearwater Program Objectives

The Clearwater Program is necessary to ensure adequate JOS wastewater system capacity and reliability through the year 2050. Specifically, the following objectives were identified in the MFP:

- Provide adequate system capacity to meet the needs of the growing population
- Provide for overall system reliability by allowing for the inspection, maintenance, repair, and replacement of aging infrastructure
- Provide support for emerging recycled water reuse and biosolids beneficial use opportunities
- Provide a long-term solution for meeting water quality requirements set forth by regulatory agencies

1.1.1.1 System Capacity

JOS wastewater flow projections are evaluated in the MFP. The Southern California Association of Governments (SCAG) provided the Sanitation Districts with population forecasts through the year 2050, which served as the basis for the flow projections. SCAG's population forecasts indicate the JOS service area population will increase to approximately 6.3 million by 2050. A geographic information system model was used to derive flow projections from the population data. The population increase will result in an average wastewater flow of about 612 million gallons per day (MGD) by the year 2050. Based on these projections, the JOS system will experience a treatment capacity shortfall of approximately 20 MGD by the year 2050.

1.1.1.2 Aging Infrastructure

The Sanitation Districts' philosophy is to design, construct, and maintain systems that have sufficient capacity and redundancy to provide the highest level of public safety and environmental protection. These systems are maintained with routine inspection, repair, and/or replacement as required. However, one critical component of the JOS, the onshore tunnels for the existing ocean discharge system, has not been inspected for over 50 years. Both tunnels cross the active Palos Verdes Fault. While the Sanitation Districts have no reason to believe serious problems exist with the tunnels, it is imperative they be properly inspected.

1.1.1.3 Emerging Reuse/Use Opportunities

Over 50 percent of the treated effluent (recycled water) produced by the JOS water reclamation plants (WRPs) is reused at various sites throughout the local region, reducing the demand on potable freshwater

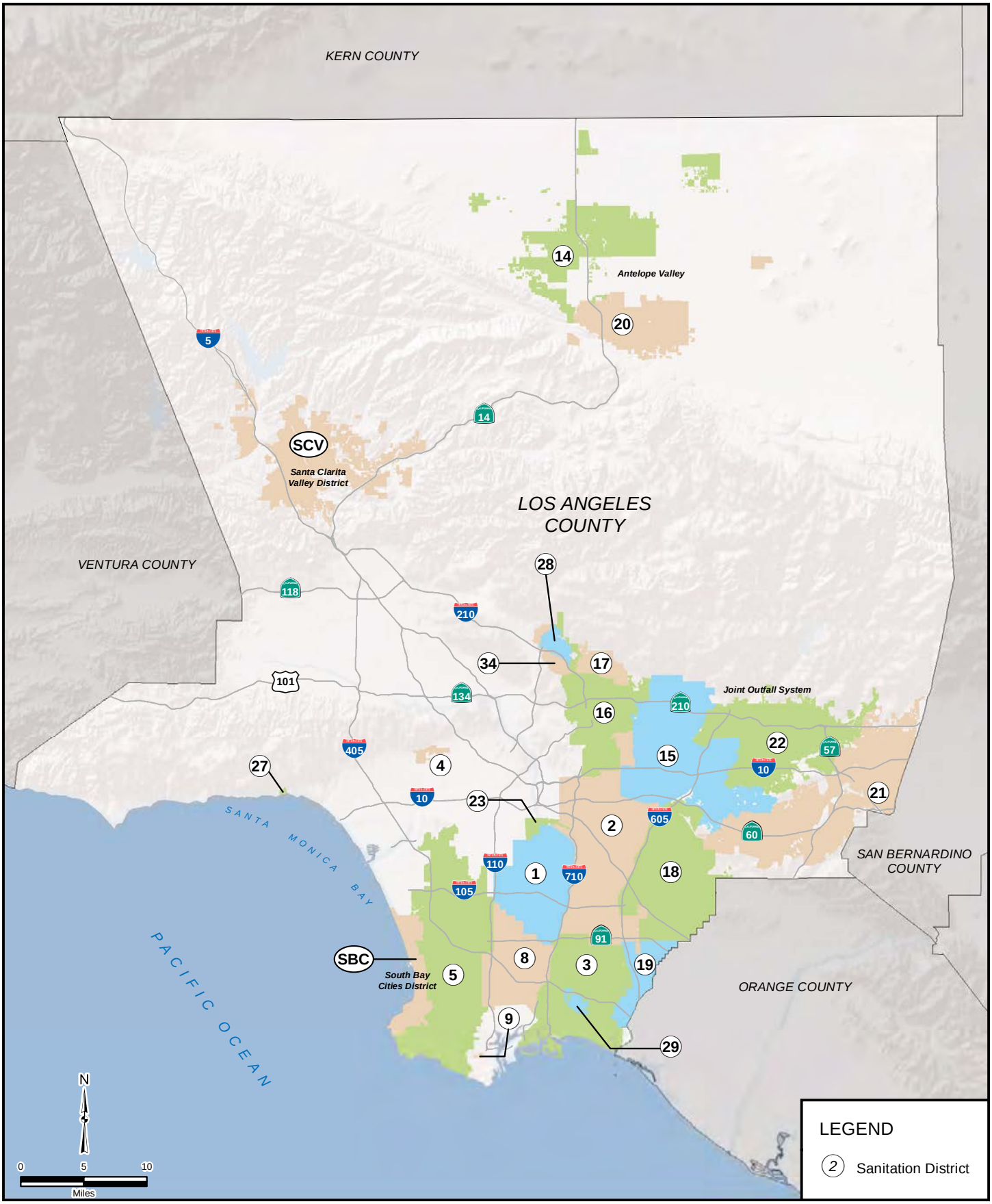


FIGURE 1-1

CLEARWATER Program

Sanitation Districts' Service Area

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

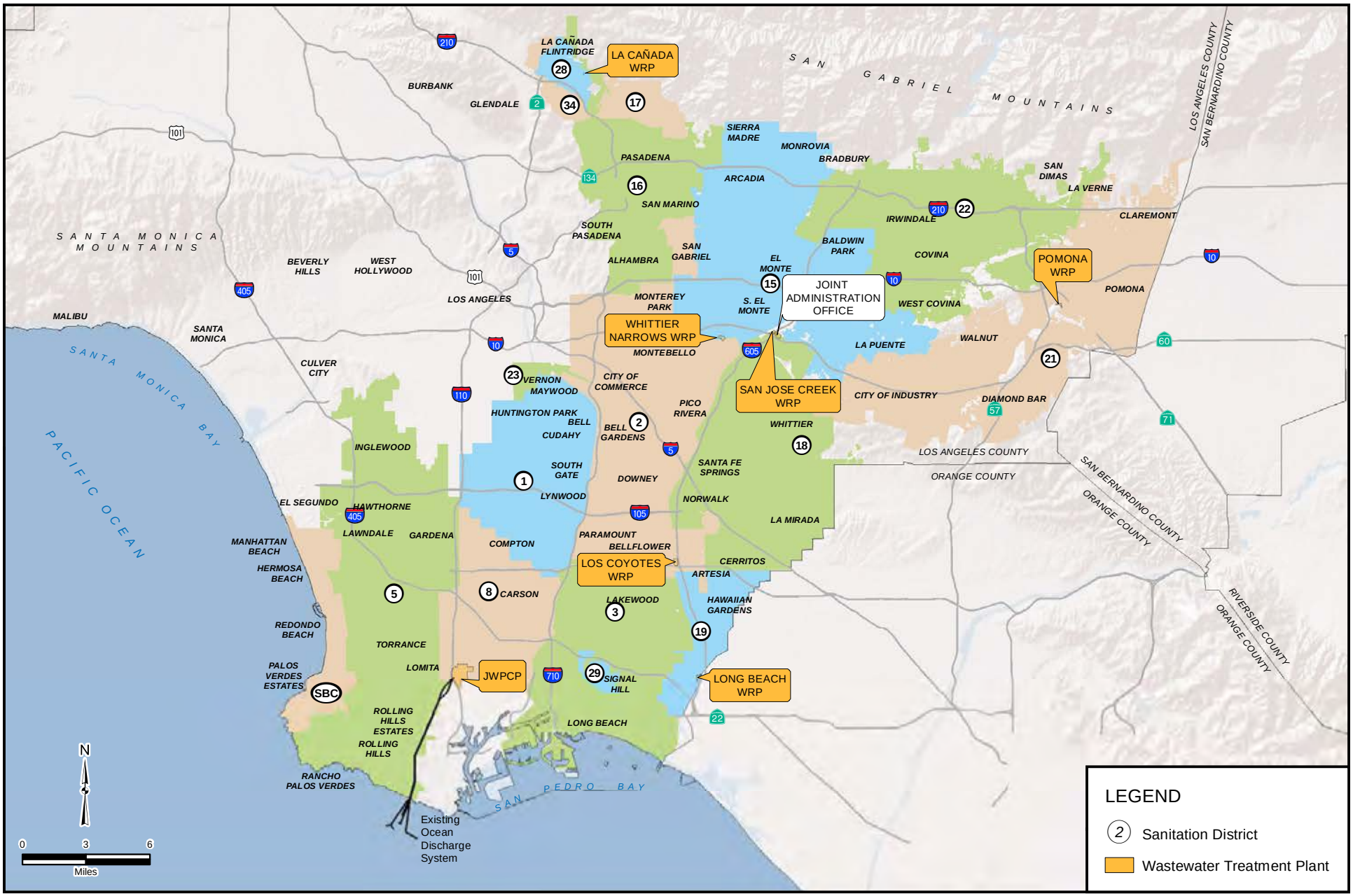


FIGURE 1-2

CLEARWATER Program

Existing Joint Outfall System

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

sources, which in turn minimizes the need to import water. In addition, during the treatment process at the JWPCP, solids are digested, producing a biogas that is converted to electricity or used for process heating. As a result, the Joint Water Pollution Control Plant (JWPCP) is electrically self-sufficient, and excess electricity is supplied to the power grid. The Sanitation Districts also participate in a wide range of biosolids management programs that promote beneficial use of this wastewater byproduct. Biosolids are beneficially used as a soil amendment for agriculture, in the production of high quality compost, in conversion to renewable fuels, and to help reduce emissions from cement kilns. Environmental benefits associated with these biosolids management programs include a reduction in the consumption of energy and raw materials that would otherwise be required in the production of new materials. The Sanitation Districts are committed to continue supporting emerging recycled water reuse and biosolids beneficial use opportunities.

1.1.1.4 Water Quality Requirements

The Sanitation Districts maintain a strong record of compliance with water quality regulations and permit requirements. They have also assisted in the drafting and/or review of future requirements. The Sanitation Districts strive to continue providing long-term engineering solutions that meet the constantly evolving and increasingly stringent water quality requirements in a cost-effective and environmentally sound manner.

1.1.2 Clearwater Program Master Facilities Plan

As a result of the Clearwater Program planning effort, system-wide improvements were identified in the MFP and are evaluated in this EIR/EIS at either the program or project level. A program-level analysis is prepared when the lead agency has a program or series of actions over time that can be characterized as one comprehensive plan for which specific construction information is typically unavailable. A program-level analysis generally analyzes broad environmental effects of the program with the understanding that additional project-specific environmental review may be required for particular aspects of the program at the time those aspects are proposed for implementation and construction (CEQA Guidelines Section 15168). However, it is possible for a program-level analysis to identify and address all potential environmental impacts, which would preclude the need for additional project-level environmental documentation. A project-level analysis generally includes the necessary construction information to analyze the specific details of the environmental effects of the proposed elements. Recommended program- and project-level improvements are summarized in the following sections.

1.1.2.1 Program

Five major program component areas within the JOS were identified in the MFP and their corresponding program elements are analyzed at the program level in this EIR/EIS. These program component areas are:

- Wastewater conveyance and treatment
- WRP effluent management
- Solids processing
- Biosolids management
- JWPCP effluent management

A detailed description of the program elements derived from the program component areas and the recommended plan and its alternatives at the program-level is provided in Chapter 3 of this EIR/EIS.

1.1.2.2 Project

Of the five major program component areas, the JWPCP effluent management component area was the only program-level component area to result in a project – either a new ocean discharge system or a modified ocean discharge system. The resulting ocean discharge system project has been organized into three functional categories with corresponding project elements for analysis in this EIR/EIS. These functional categories are:

- Tunnel alignment
- Shaft sites
- Riser/diffuser area

A detailed description of the project elements derived from the functional categories and the recommended plan and its alternatives at the project-level is provided in Chapter 3 of this EIR/EIS.

The level of CEQA and NEPA analysis for each component area and functional category is identified in Table 1-1.

Table 1-1. CEQA and NEPA Analysis at the Program Level and Project Level

	CEQA Analysis		NEPA Analysis	
Program Component Area	**Program**	**Project**	**Program**	**Project**
Wastewater Conveyance and Treatment	X			
Solids Processing	X			
Biosolids Management	X			
WRP Effluent Management	X			
JWPCP Effluent Management		X		X
Functional Category				
Tunnel Alignment		X		X
Shaft Sites		X		X
Riser/Diffuser Area		X		X

1.1.2.3 Project Purpose and Needs

Currently, the Sanitation Districts rely on two onshore tunnels and four offshore ocean outfall structures to convey effluent from the JWPCP in the city of Carson to the Pacific Ocean. The two tunnels were constructed in 1937 and 1958 and have not been inspected for over 50 years. Inspection of the tunnels is not possible due to their overall length, limited access, intermediate connections between the tunnels, and continuous flow through the tunnels. Furthermore, in January 1995, the JOS services area was inundated by two major back-to-back storm events. The resulting peak wastewater flows in the sewerage system from this storm event nearly exceeded the capacity of the JWPCP ocean discharge system. If the tunnels were to be damaged or the capacity of the ocean discharge system exceeded, treated JWPCP effluent would need to be bypassed into the Wilmington Drain. If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the JWPCP could overflow and untreated wastewater could enter various water courses, such as the Dominguez Channel and the Los Angeles River. The project purpose and needs are to inspect and upgrade the aging ocean discharge system, to provide sufficient capacity in the JOS to accommodate the estimated 2050 peak wastewater flows, and to comply with all applicable water quality standards including regulations prohibiting sewer overflows. To meet these needs, the Sanitation Districts propose to either modify the existing ocean discharge system or construct a new ocean discharge system.

1.2 Purpose of an EIR/EIS

1.2.1 CEQA

CEQA was enacted by the California legislature in 1970 and requires public agency decision makers to consider the environmental effects of their actions. When a state or local agency determines that a proposed project has the potential to significantly affect the environment, an environmental impact report (EIR) is required. The purpose of an EIR is to identify significant effects of a proposed project on the environment, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided. A public agency must mitigate or avoid significant environmental impacts of projects it carries out or approves whenever it is feasible to do so. If significant impacts cannot be avoided or mitigated, the project may still be carried out if the approving agency finds that economic, legal, social, technological, or other benefits outweigh the unavoidable significant environmental effects.

1.2.2 NEPA

NEPA was enacted by Congress in 1969 and requires federal agency decision makers to document and consider the environmental implications of their actions. When a federal agency determines that a proposed project could result in significant environmental effects, an environmental impact statement (EIS) is required. The purpose of an EIS is to provide full and fair discussion of anticipated significant environmental impacts. The EIS must also inform decision makers and the public of the reasonable alternatives that would avoid or minimize significant impacts or would enhance the quality of the human environment. An EIS is both a disclosure document and a tool used by federal officials in conjunction with other relevant material to plan actions and make decisions.

The project purpose and needs, as described in Section 1.1.2.3, are to inspect and upgrade the aging ocean discharge system, to provide sufficient capacity in the JOS to accommodate the estimated 2050 storm flows, and to comply with all applicable water quality standards including regulations prohibiting sewer overflows. To meet these needs, the Sanitation Districts propose to either modify the existing ocean discharge system or construct a new ocean discharge system, which would fall under federal jurisdiction and thus require NEPA compliance.

1.3 Lead, Responsible, and Trustee Agencies

The Sanitation Districts and the Corps are the lead agencies for evaluating potential impacts and assessing the need for mitigation measures under CEQA and NEPA, respectively. The Sanitation Districts and the Corps are preparing this joint EIR/EIS in the interest of efficiency and to avoid duplication of effort.

Several other agencies have special roles with respect to the recommended plan and may use this EIR/EIS as the basis for their decisions to issue any approvals and/or permits that might be required.
Section 15381 of the CEQA Guidelines defines a *responsible agency* as:

> …a public agency which proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or negative declaration. For the purposes of CEQA, the term "responsible agency" includes all public agencies other than the lead agency which have discretionary approval power over the project.

Additionally, Section 15386 of the CEQA Guidelines defines a *trustee agency* as:

> …a state agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the state of California.

Responsible and trustee federal, state, and local agencies that may rely on this EIR/EIS in a review capacity or as a basis for issuance of a permit for the recommended plan or for related actions are listed in Table 1-2.

Table 1-2. Agencies Expected to Use This EIR/EIS

Agency/Permit and Action	Program[a]	Project
Federal		
United States Army Corps of Engineers		
Permit under Section 404 of the Clean Water Act for discharge of dredged or fill material into waters of the United States		X
Permit under Section 103 of the Marine Protection, Research, and Sanctuaries Act for the transportation of dredged material intended for ocean disposal		X
Permit under Section 10 of the Rivers and Harbors Act for work or structures in or affecting navigable waters of the United States		X
United States Fish and Wildlife Service		
Compliance with Section 7 of the federal Endangered Species Act for effects to listed species and critical habitat through coordination via the lead federal agency	X	X
National Marine Fisheries Service		
Compliance with Section 7 of the federal Endangered Species Act for effects to listed species and critical habitat through coordination via the lead federal agency		X
Compliance with the federal Marine Mammal Protection Act for effects (e.g., take or harassment) to marine mammals through coordination via the lead federal agency		X
Compliance with the federal Magnuson-Stevens Fishery Act for effects to essential fish habitat through coordination via the lead federal agency		X
United States Environmental Protection Agency		
Conformity with the Clean Air Act	X	X
Determine suitability of dredged material for ocean disposal in accordance with Section 103 of the Marine Protection, Research, and Sanctuaries Act		X
Review and submit recommendations to the Corps related to the issuance of permits under Section 103 of the Marine Protection, Research, and Sanctuaries Act, Section 404 of the Clean Water Act, and ensure compliance with Section 404(b)(1) of the Clean Water Act		X
Review and submit recommendations to the California State Water Quality Control Board for the National Pollutant Discharge Elimination System permit for discharge of treated wastewater under Section 402 of the Clean Water Act	X	
Determine suitability of construction-related dewatering for ocean disposal or discharge into waters of the United States		X
Coordinate with the Los Angeles Regional Water Quality Control Board for issuance of 401 Water Quality Certification		X
United States Coast Guard		
Permit for Private Aids to Navigation for navigable waters of the United States. Jurisdiction over marine facilities and vessel transportation in harbor waters. Responsible for ensuring safe navigation and for preventing and responding to oil or hazardous materials releases in the marine environment.		X

Table 1-2 (Continued)

Agency/Permit and Action	Program[a]	Project
State		
Regional Water Quality Control Board		
Permit under Section 402 of the Clean Water Act (National Pollutant Discharge Elimination System)	X	X
General Permit (National Pollutant Discharge Elimination System) for dewatering and construction activities	X	X
Water Quality Certification under Section 401 of the Clean Water Act		X
Waste Discharge Requirements under the Porter-Cologne Act		X
California Office of Historic Preservation		
Compliance with Section 106 of the National Historic Preservation Act through coordination via the federal lead agency	X	X
California Department of Fish and Game		
Streambed Alteration Agreement under Section 1602 of the California Fish and Game Code for activities that would alter a state river, stream, or other waters of the state	X	
Consistency Determination under Section 2080.1 of the California Fish and Game Code for take of state-listed endangered or threatened terrestrial and aquatic species (that are also listed under the federal Endangered Species Act)	X	X
Compliance with oil spill prevention and response planning requirements set forth in Subdivision 4 of 14 CCR Division 1 for marine vessels carrying petroleum and nontank vessels over 300 gross tons (Under the California Office of Spill Prevention and Response).		X
California Coastal Commission		
Coastal Development Permit for development within the coastal zone	X	X
Federal Coastal Zone Management Act consistency determination	X	X
State Lands Commission		
Land Use Lease for encroachments, docks, dredging, and crossing on state tidal and submerged lands		X
California Department of Transportation		
Easements and/or rights-of-way		X
Local		
South Coast Air Quality Management District		
Conformity with the Air Quality Management Plan		X
Permit or update to existing permits for emissions	X	
City of Los Angeles		
Easements and/or rights-of-way		X
Building permits, fire plan approvals, land lease, and/or easements for construction of facilities at Port of Los Angeles and/or park and recreation areas		X
City of Carson		
Conformance to building and safety construction requirements at JWPCP	X	X
County of Los Angeles		
Easements and/or rights-of-way	X	X
Easements through and/or at park and recreation areas		X
Fire protection plan approvals	X	X

[a] Applies to program component areas other than JWPCP Effluent Management

1.4 Scope and Content of the EIR/EIS

The scope of analysis and content for this EIR/EIS were established based on the professional judgment regarding the nature of the recommended plan, Appendix G of the CEQA Guidelines, the Corps' standard NEPA practices, comments received during the notice of preparation/notice of intent (NOP/NOI) review process, and the results of the Preliminary Screening Analysis (see Appendix 1-A).

The following issues have been determined to be potentially significant and, therefore, are evaluated in this EIR/EIS:

- Aesthetics
- Air quality
- Biological resources (terrestrial)
- Cultural resources
- Geology, soils, and mineral resources
- Greenhouse gas emissions
- Hazards and hazardous materials
- Hydrology, water quality, and public health
- Land use and planning
- Marine environment
- Noise and vibrations
- Employment, housing, socioeconomics, and environmental justice
- Public services
- Recreation
- Transportation and traffic (terrestrial)
- Transportation and traffic (marine)
- Utilities, service systems, and energy

These issues are discussed by resource area in Chapters 4 through 20. Mitigation measures to reduce impacts to a less than significant level are proposed whenever feasible.

1.4.1 CEQA Guidelines and Scope of Analysis

The CEQA scope of analysis and content for this EIR/EIS are primarily based on criteria from the thresholds of significance provided in the CEQA Guidelines. Some thresholds or criteria have been adapted to the specific circumstances of the recommended plan and its alternatives. The thresholds of significance are further discussed in Section 1.7.3 of this chapter.

The CEQA scope of analysis encompasses all five of the program component areas as described in Sections 1.1.2.1 and 1.1.2.2 of this chapter and as shown in Table 1-1.

1.4.2 NEPA Scope of Analysis

As part of the NEPA process, the Corps is responsible for establishing the NEPA scope of analysis pursuant to 33 CFR Part 325, Appendix B, which states:

> In some situations, a permit applicant may propose to conduct a specific activity requiring a Department of the Army (DA) permit, which is merely one component of a larger project. The district engineer should establish the scope of the NEPA document to address the impacts of the specific activity requiring a DA permit and those portions of the entire project over which the district engineer has sufficient control and responsibility to warrant federal review.

The Clearwater Program MFP entails five program component areas, as described in Section 1.1.2.1 of this chapter. Of the five major component areas, the JWPCP effluent management component area was the only program-level component area to result in a project – either a new ocean discharge system or a modified ocean discharge system. The recommended project and its alternatives would entail both onshore and offshore construction activities. Offshore construction activities would include regulated activities within the Corps' geographic jurisdiction (i.e., the marine environment). Based on the above and in consideration of the Sanitation Districts' No-Federal-Action Alternative (Section 3.4.1.6), construction of the recommended project would require a permit from the Corps. In contrast, program component areas of the MFP would not result in regulated activities within the Corps' geographic jurisdiction. Furthermore, there is not sufficient federal control and responsibility for the five program component areas. Therefore, the Corps' NEPA scope of analysis would encompass the recommended project and its alternatives and would exclude all program component areas of the MFP. Details of the project and the Corps' project-level NEPA scope of analysis are further described in Chapter 3.

1.4.3 Agency and Public Input

The scope of analysis and content of this EIR/EIS were established to ensure that the comments received from regulatory agencies and the public during the NOP/NOI review process would be addressed.

The following is a timeline of the public involvement and the CEQA/NEPA notices that have occurred:

- **October 6, 2008.** The NOI was published in the *Federal Register* by the Corps, posted on its website, and mailed or emailed to agencies, organizations, and individuals.
- **October 10, 2008.** The Sanitation Districts released the NOP to agencies, organizations, individuals, and the California Office of Planning and Research, State Clearinghouse (received October 15, 2008). The State Clearinghouse assigned State Clearinghouse Number 2008101074 to the CEQA documents.
- **October 10, 2008.** The NOP was filed with the Los Angeles City Clerk and the Los Angeles County Clerk.
- **October 16-23, 2008.** Notices were printed in ten newspapers throughout the JOS service area identifying the time and location for the public scoping meetings.
- **October 29, October 30, and November 5, 2008.** The Sanitation Districts held four public scoping meetings for the NOP.
- **November 6, 2008.** The Sanitation Districts and the Corps conducted a joint public scoping meeting for the NOP and NOI.

- **November 13, 2008.** The comment period for the NOP ended.
- **November 21, 2008.** The comment period for the NOI ended.

Comments received during the NOP/NOI process were incorporated into a scoping report, which is included in Appendix 1-B.

1.5 Intended Uses of This EIR/EIS

This EIR/EIS has been prepared in accordance with applicable federal and state environmental regulations, policies, and laws to inform federal, state, and local decision makers regarding the potential environmental impacts of the recommended plan and its alternatives. As an informational document, an EIR/EIS does not recommend approval or denial of a project. The draft EIR/EIS was provided to the public for review, comment, and participation in the planning process. This final EIR/EIS has been prepared after public review and comment. The final EIR/EIS includes responses to comments on the draft EIR/EIS received from agencies, organizations, and individuals. It will be distributed to provide the basis for decision making by the CEQA and NEPA lead agencies, as described below, and other responsible and trustee agencies.

1.5.1 Sanitation Districts' Use

As the lead agency pursuant to CEQA, the Sanitation Districts have jurisdictional authority over the recommended plan. This EIR/EIS will be used by the Sanitation Districts to make decisions with regard to the construction and operation of the recommended plan and to inform agencies considering permit applications and other actions required for the construction, lease, and operation of the recommended plan. Federal, state, regional, and local agencies that have jurisdiction over some part of the recommended plan or a resource area affected by the recommended plan are expected to use this EIR/EIS as part of their approval or permit process as set forth in Table 1-2.

Actions that could be undertaken by the Sanitation Districts following preparation of the final EIR include, but are not limited to:

- Certifying the EIR
- Approving the recommended plan or an alternative
- Completing final design
- Obtaining other agency permits and approvals (e.g., dredge and fill, grading, construction, occupancy, and fire safety)
- Approving construction contracts
- Obtaining state and federal funding

1.5.2 Corps' Use

Pursuant to NEPA, this EIR/EIS fulfills the Corps' responsibility to document a reasonable range of project alternatives, and provide full and fair discussion of anticipated significant environmental impacts within Corps' NEPA scope of analysis.

Furthermore, the Corps would utilize contents of this document in its permit evaluation process. The Corps' permit evaluation process incorporates factors indicated in 33 CFR Section 320.4: public interest

review; effects on wetlands; fish and wildlife; water quality; historic, cultural, scenic, and recreational values; consideration of private ownership; effects on coastal zones; and other federal, state, or local requirements.

Last, the project alternatives evaluated in this document and the analysis of environmental impacts also fulfill the Corps' responsibility to ensure compliance with the Clean Water Act (CWA) 404(b)(1) guidelines. For activities involving Section 404 discharges, the Corps is required to insure that its permit decision is in compliance with Section 404(b)(1) of the CWA. The Section 404(b)(1) guidelines state that no discharge of dredged or fill material will be permitted if there is a practicable alternative to the proposed discharge that would have a less significant impact on the aquatic ecosystem, so long as the alternative does not have other significant environmental consequences (40 CFR Section 230.10[a]). A Section 404(b)(1) evaluation typically includes the following types of analyses:

- Factual determinations (e.g., on substrate; currents, circulation, and drainage patterns; suspended particulates and turbidity; water quality; mixing zone; habitat for fish and other aquatic organisms; wildlife habitat; endangered or threatened species; and biological availability of possible contaminants in dredged or fill material).
- Findings of compliance or noncompliance with restrictions on discharge, including evaluation of the availability of practicable alternatives that would have a less significant impact on the aquatic ecosystem, and findings of compliance with a variety of state and federal regulations.
- Identification of practical steps taken to minimize potential significant impacts of the discharge on the aquatic ecosystem.
- A conclusion about the compliance of the recommended plan with the Section 404(b)(1) guidelines.

The Corps' record of decision (ROD) will document the Corps' decision on the proposed action, including issuance of any permit and/or required environmental mitigation commitments.

1.6 Relationship to Existing Plans

One of the primary objectives of the CEQA/NEPA process is to ensure that the recommended plan and its alternatives are consistent with applicable statutes, plans, policies, and other regulatory requirements. Major legislative acts, statues, plans, and policies applicable to this CEQA/NEPA document are listed in Table 1-3. The applicable rules or regulations that were promulgated under these acts are described in the relevant resource chapters. Analysis of plan consistency is also contained in the applicable individual resource chapter.

Table 1-3. Applicable Statutes, Plans, Policies, and Other Regulatory Requirements

Federal
Clean Water Act, 1972
Section 404 gives the Environmental Protection Agency (EPA) authority to regulate the discharge of pollutants from point sources to waters of the United States. The Corps regulates activities under Section 404 that involve a discharge of dredged or fill material into waters of the United States. Under Section 404(b)(1) of the CWA, the Corps may only issue authorization for the least environmentally damaging practicable alternative.
Section 402 of the CWA requires the EPA to develop and implement the National Pollutant Discharge Elimination System program. Section 402 has been delegated to the state for implementation through the Regional Water Quality Control Boards (RWQCBs).
Section 401 of the CWA requires that any discharge of dredged or fill material into waters of the United States not violate state water quality standards.

Table 1-3 (Continued)

Federal
Clean Air Act, 1963
Requires the EPA to establish national ambient air quality standards (NAAQS) for air pollutants. The EPA has promulgated NAAQS for criteria pollutants, including carbon monoxide (CO), ozone (O_3), sulfur oxides, nitrogen oxides, particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and lead. State governments must develop attainment plans to meet the NAAQS by a specific date. As outlined in the California Health and Safety Code Section 39602, the Air Resources Board (ARB) is designated as the air pollution control agency of the state for federal law purposes and is responsible for developing a state implementation plan as required by the Clean Air Act (CAA). Areas not meeting the NAAQS, referred to as nonattainment areas, are required to implement specified air pollution control measures. In California, responsibility for air pollution control measures is divided between the ARB and local air districts.
Rivers and Harbors Act, 1899
Section 10 regulates the creation of any obstruction, not affirmatively authorized by Congress, to the navigable capacity of any waters of the United States. Section 10 requires a permit from the Corps for the work or structures in, over, or under any navigable water of the U.S., including the excavation/dredging or deposition of material in these waters, or any obstruction or alteration in a navigable water.
Marine Protection, Research, and Sanctuaries Act, 1972
Prohibits unregulated dumping of material into the ocean to prevent or strictly regulate dumping of materials that would adversely affect human health and welfare, the marine environment, or economic potential.
Marine Mammal Protection Act, 1972
Prohibits, with certain exceptions, the take of marine mammals in the U.S. and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. Administered by the National Oceanic and Atmospheric Administration's (NOAA) Fisheries Service.
Endangered Species Act, 1973
Section 7 of the Endangered Species Act, requires all federal agencies to ensure, in consultation with the NOAA Fisheries Service and the U.S. Fish and Wildlife Service, that any proposed action that they fund, authorize, or carry out does not jeopardize the existence of a federally listed, endangered, or threatened wildlife and plant species or adversely modify or destroy critical habitat.
Federal Migratory Bird Treaty Act, 1918
Makes it unlawful at any time, by any means or in any manner, to take (pursue, hunt, take, capture, possess, transport, sell, or kill) or attempt to take migratory birds. The U.S. Fish and Wildlife Service is the lead agency for migratory birds.
National Historic Preservation Act, 1966
Section 106 establishes that a federal agency involved in a proposed project or activity is responsible for initiating and completing the review process regarding adverse effects to properties that are listed or eligible for listing on the National Register. The agency must confer with the State Historic Preservation Officer (an official appointed in each state or territory to administer the National Historic Program) and possibly the Advisory Council on Historic Preservation.
Coastal Zone Management Act, 1972
All federal agencies with activities directly affecting the coastal zone, or with development projects within that zone, must comply with the state coastal acts to ensure that those activities or projects are consistent to the maximum extent practicable.
Federal Regulations Concerning Private Aids to Navigation, 33 CFR Part 66
The placement of aids to navigation (or fixed or floating structures) in navigable waters is regulated by the U.S. Coast Guard under 33 CFR, Part 66. These aids are designed to allow individuals or organizations to mark privately owned marine obstructions or other similar hazards to navigation. The regulations also govern artificial islands and structures that are erected on or over the seabed and subsoil of the Outer Continental Shelf and in the waters under the jurisdiction of the U.S., for the purpose of exploring for, developing, removing, and transporting resources from these waters.
State
State of California Ocean Plan, 2005
The California Ocean Plan (SWRCB 2005) was adopted by the State Water Resources Control Board (SWRCB) and approved by the U.S. EPA. Mandates the quality of ocean waters and requires control of discharge of waste to ocean waters. Establishes minimum protective bacteriological standards for coastal waters. Beneficial uses to be protected include industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance; rare and endangered species; marine habitat; fish migration; fish spawning; and shellfish harvesting.

Table 1-3 (Continued)

State
Porter-Cologne Water Quality Control Act, 1969
The SWRCB regulates actions that would involve discharging waste, or proposing to discharge waste, with any region that could affect the waters of the state. The SWRCB regulates all activities not regulated by the Corps due to a lack of connectivity with a navigable water body.
California Tidelands Trust Act, 1911
Submerged lands and tidelands within the Port of Los Angeles are held in trust by the city of Los Angeles and administered by the Harbor Department to promote and develop commerce, navigation, and fisheries, and other uses of statewide interest and benefit, including commercial, industrial, and transportation uses; public buildings and public recreational facilities; wildlife habitat; and open space.
California Coastal Act, 1976
Designates the Port of Los Angeles and its facilities as "one of the state's primary economic and coastal resources and…an essential element of the national maritime industry" (PRC Section 30701). The act also establishes that the highest priority for any water or land area use within the Port of Los Angeles will be for developments that are completely dependent on such harbor water areas and/or harbor land areas for their operations (Sections 30001.5 (d), 30255, and 31260). The act further provides that the "highest priority [be given] to the use of existing land space within harbors for port purposes, including, but not limited to, navigational facilities, shipping industries, and necessary support and access facilities" (Section 30708 (c)).
California Clean Air Act, 1988
Requires attainment of state ambient air quality standards by the earliest practicable date. Each air district that is located in a nonattainment area is required to submit an attainment plan to the ARB. Local air districts that administer programs for nonattainment areas designated serious and above are required to revise their air quality plans to include specified emission reduction strategies, meet milestones in implementing emission controls, and achieve more healthful air quality. Air quality management plans (AQMPs) for nonattainment areas must be designed to achieve basin-wide emission reductions of at least 5 percent per year or 15 percent over a 3-year period. For air basins designated as nonattainment for both federal and state air quality standards for a single pollutant, the emission reductions are to be calculated with respect to the federal CAA baseline year. For the South Coast Air Basin, the baseline year is 2002. The JOS facilities are located within the jurisdiction of the South Coast Air Quality Management District (SCAQMD), which is classified as a severe nonattainment area for ozone and nonattainment for PM_{10} and $PM_{2.5}$.
Greenhouse Gas Legislation, 2006
California passed the Global Warming Solutions Act (Assembly Bill 32) in 2006. This legislation requires the state of California to reduce its carbon emissions by approximately 25% by the year 2020.
California Fish and Game Code
Under Code Sections 1600–1616, the California Department of Fish and Game has authority to regulate work that will substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake. A Streambed Alteration Agreement under Section 1602 would be required for activities that would alter a state river, stream, or other waters of the state. A Consistency Determination under 2080.1 for take of state-listed endangered or threatened terrestrial or threatened species would also be required.
California Coastal Plan
The Los Angeles Harbor Department has coastal development permit authority for activities in the Port of Los Angeles.
Regional and Local
City of Carson General Plan, 2004
The city of Carson guides future development through its general plan goals and policies (City of Carson 2004).
City of Los Angeles General Plan – San Pedro Community Plan, 1999
The San Pedro Community Plan (City of Los Angeles 1999a) serves as a basis for future development of the community and it is the land use plan portion of its local coastal program for San Pedro. The San Pedro local coastal program and the land use plan emphasize that public access, recreational opportunities, and visual qualities are to be maximized.

Table 1-3 (Continued)

Regional and Local
City of Los Angeles General Plan – Wilmington-Harbor City Community Plan, 1999
The Wilmington-Harbor City Community Plan (City of Los Angeles 1999b) is part of the City of Los Angeles General Plan. The plan recommends interagency coordination in the planning and implementation of projects occurring in the Port of Los Angeles to facilitate efficiency in port operations and to serve the interests of the adjacent communities. All project tunnel alignments pass underneath Wilmington. Issues identified in the plan include: (1) compatibility between residential and adjacent commercial and other uses, (2) protection of residents from noxious environmental impacts of industrial activities, (3) adequate buffering of industrial areas from nearby residential and commercial uses, and (4) truck traffic related to nearby industrial or container storage facilities invading local residential streets.
Port of Los Angeles Master Plan With Amendments, 2002
The Port of Los Angeles Master Plan (POLA 1979) provides for the development, expansion, and alteration of the port (both short-term and long-term) for commerce, navigation, fisheries, port-dependent activities, and general public access. Those objectives are consistent with the provisions of the California Coastal Act (1976), the City of Los Angeles Charter (2011), and applicable federal, state, and municipal laws and regulations.
Water Quality Control Plan for the Los Angeles Region, 1994
The Water Quality Control Plan for the Los Angeles River Basin (Region 4) (basin plan) (LARWQCB 1994) was adopted by the Los Angeles Regional Water Quality Control Board (LARWQCB) in 1968, significantly revised in 1994, and has been amended through May 2009. The plan sets forth the water quality objectives for all surface and ground waters within the Los Angeles River Basin. The basin plan designates beneficial uses (BUs) for all such waters and specifies narrative and numerical water quality objectives that must be maintained or attained to protect those uses. The basin plan identifies general types of water quality problems that can threaten BUs of water resources in the Los Angeles region and identifies required or recommended control measures for these problems. The basin plan also summarizes applicable provisions of SWRCB and RWQCB planning and policy documents, as well as water quality management plans adopted by other federal, state, and regional agencies. In addition, past and present water quality monitoring programs are summarized. LARWQCB orders are based on applicable water quality objectives and/or prohibitions specified in the basin plan.
Water Quality Control Policy – Enclosed Bays and Estuaries of California, 1974
The SWRCB adopted a water quality control policy that provides principles and guidelines to prevent degradation and to protect the beneficial uses of waters of enclosed bays and estuaries. The Los Angeles Harbor is considered to be an enclosed bay under this policy. The policy addresses activities such as the discharge of effluent, thermal wastes, radiological waste, dredged materials, and other materials that adversely affect beneficial uses of the bay and estuarine waters. Among other requirements, waste discharge requirements developed by the RWQCB must be consistent with this policy.
South Coast Air Quality Management District and Air Quality Management Plan
The CAA and its subsequent amendments established the NAAQS and delegated the enforcement of these standards to the states. In areas that exceed the NAAQS, the CAA requires states to prepare a state implementation plan that details how the NAAQS would be met within mandated timeframes. The CAA identifies emission reduction goals and compliance dates based on the severity of the ambient air quality standard violation within an area. The California Clean Air Act outlines a program to attain the more stringent California Ambient Air Quality Standards for O_3, nitrogen dioxide, sulfur dioxide, and CO by the earliest practical date. The Lewis Air Quality Act of 1976 established the SCAQMD, created SCAQMD's jurisdiction over the four-county South Coast Air Basin (SCAB), and mandated a planning process requiring preparation of an AQMP. The 2007 AQMP (SCAQMD 2007) proposes emission reduction strategies that would enable the SCAB to achieve the national and most state ambient air quality standards within the mandated timeframes.
SCAG Regional Comprehensive Plan
SCAG's Regional Comprehensive Plan (SCAG 2008) covers SCAG's planning policy for important regional issues like housing, traffic/transportation, water, and air quality. The Regional Comprehensive Plan is based on the Compass Growth Vision and 2% Strategy adopted in April 2004, which are based on the principles of mobility, livability, prosperity, and sustainability. The Regional Comprehensive Plan Guiding Principles include: ▪ Improve mobility for all residents. Improve the efficiency of the transportation system by strategically adding new travel choices to enhance system connectivity in concert with land use decisions and environmental objectives. ▪ Foster livability in all communities. Foster safe, healthy, walkable communities with diverse services, strong civic participation, affordable housing, and equal distribution of environmental benefits. ▪ Enable prosperity for all people. Promote economic vitality and new economies by providing housing, education, and job training opportunities for all people. ▪ Promote sustainability for future generations. Promote a region where quality of life and economic prosperity for future generations are supported by the sustainable use of natural resources.

Table 1-3 (Continued)

Regional and Local
Congestion Management Program
The Congestion Management Program (CMP) is a state-mandated program intended as the analytical basis for transportation decisions made through the State Transportation Improvement Program process. The CMP was developed to: (1) link land use, transportation, and air quality decisions; (2) develop a partnership among transportation decision makers on devising appropriate transportation solutions that include all modes of travel; and (3) propose transportation projects that are eligible to compete for state gas tax funds. The CMP includes a land use analysis program, which requires local jurisdictions to analyze the impacts of land use decisions on the regional transportation system. For development projects, an EIR is required based on local determination and must incorporate a transportation impact analysis into the EIR. The CMP for Los Angeles County was adopted in 2004 (Los Angeles County Metropolitan Transportation Authority 2004).
City of Los Angeles Integrated Resources Plan, 2006
The Integrated Resources Plan (IRP) (MWD 2010) incorporates the values of Los Angeles communities into infrastructure planning and integrates planning for the three interdependent water systems: wastewater, recycled water, and storm water. The IRP identifies solutions for these challenges that will meet 20% projected increase in wastewater flow over the next 20 years while maximizing the beneficial reuse of recycled water and urban runoff, optimizing the use of our existing facilities and water resources, reducing pollution, and reducing dependency on imported water.
City of Rancho Palos Verdes General Plan/Environmental Impact Report, 1975
The Infrastructure chapter of the City of Rancho Palos Verdes General Plan (City of Rancho Palos Verdes 2012) provides policies related to public infrastructure. The Disposal/Recovery Systems addresses sanitation, while the Transportation Systems discusses the vehicular networks. The general plan is currently being updated.

1.7 Key Principles Guiding Preparation of This EIR/EIS

1.7.1 Emphasis on Significant Environmental Effects

This EIR/EIS focuses on the significant environmental effects and their relevance to the decision-making process for the recommended plan and its alternatives. NEPA requires the federal lead agency to rely on a "scientific and analytical basis for the comparison of alternatives" (40 CFR Section 1502.16) in making its decisions. Commonly, when preparing a joint document in the state of California, the federal lead agency will adopt the CEQA significance thresholds as its scientific basis, unless otherwise noted.

Environmental impacts, as defined by CEQA, include physical effects on the environment. In this document, the term is used synonymously with the term *environmental effect*s under NEPA. The CEQA Guidelines (Section 15360) define the *environment* as follows:

> The physical conditions which exist within the areas which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

This definition does not include economic impacts (e.g., changes in property values) or social impacts (e.g., a particular group of persons moving into an area). The CEQA Guidelines (Section 15131[a]) state, "economic or social effects of a project shall not be treated as significant effects on the environment." However, economic or social effects are relevant to physical effects in two situations. In the first, according to Section 15131(a) of the CEQA Guidelines, "an EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes to physical changes caused in turn by the economic or social changes." In other words, if a physical impact leads to an economic impact, which then leads to another physical impact, that ultimate physical impact must be evaluated in the EIR. In the second instance, according to Section 15131(b) of the CEQA Guidelines, "economic or social effects of a project may be used to determine the significance of a physical change caused by a project."

As with economic or social impacts, psychological impacts are outside the definition of the term "environmental." While not specifically discussed in the CEQA Guidelines, the exclusion of psychological impacts was specifically affirmed in a 1999 court decision (National Parks and Conservation Association v. County of Riverside 71 Cal. App. 4th 1341, 1364).

In view of these legal precedents, the Sanitation Districts are not required to treat economic, social, or psychological impacts as significant environmental impacts absent a related physical effect on the environment. Therefore, such impacts are only discussed to the extent necessary to determine the significance of the physical impacts of the recommended plan and its alternatives.

1.7.2 Forecasting

In this EIR/EIS, the Sanitation Districts and the Corps have made their best efforts to predict and evaluate the reasonably foreseeable direct, indirect, and cumulative environmental impacts of the recommended plan and its alternatives. CEQA and NEPA do not require the Sanitation Districts and the Corps to engage in speculation about impacts that are not reasonably foreseeable. In these instances, CEQA does not require a worst-case analysis (CEQA Guidelines Sections 15144, 15145). Similarly, NEPA does not require a worst-case analysis when confronted with incomplete or unavailable information (40 CFR Section 1502.22).

1.7.3 Environmental Thresholds, Substantial Evidence, and Disagreement Among Experts

The threshold of significance for a given environmental effect is the level at which the Sanitation Districts and/or the Corps find an effect of the recommended plan and its alternatives to be significant. A *threshold of significance* can be defined as a "quantitative or qualitative standard, or set of criteria, pursuant to which significance of a given environmental effect may be determined" (CEQA Guidelines, Section 15064.7 [a]). The thresholds of significance provided in the CEQA Guidelines have been used as the basis of the environmental impact analysis for this EIR/EIS. Some thresholds or criteria have been adapted to the specific circumstances of the recommended plan and its alternatives. The Corps has adopted the CEQA thresholds presented in this document to meet its NEPA responsibilities, unless otherwise noted. The criteria for determining the significance of environmental impacts in this EIR/EIS analysis are described under each resource area in Chapters 4 through 20.

The identification of impacts as significant or less than significant is an important function of an EIR/EIS. While impacts determined to be less than significant need only be acknowledged as such, an EIR must identify feasible mitigation measures for any impact identified as significant. There may be no feasible mitigation measures for some impacts; therefore, an impact may remain significant and unavoidable. In preparing this document, the Sanitation Districts and the Corps have based their conclusions about the significance of environmental impacts on identifiable thresholds and have supported these conclusions with substantial scientific evidence. During the public review of the draft EIR/EIS, disagreements could be raised regarding the significance of environmental impacts. Such disagreements, if any, have been noted and will be considered by the decision makers during the public hearing process. However, to be adequate under CEQA and NEPA, this EIR/EIS need not resolve all such disagreements.

If it is known that expert opinions differ on an issue concerning the environmental impacts of a recommended plan and its alternatives, the main points of disagreement are to be described as required by the CEQA Guidelines. This EIR/EIS summarizes the conflicting opinions and includes sufficient information to allow the public and decision makers to take intelligent account of the environmental consequences of their actions.

In rendering a decision on a program and/or project in which there is a disagreement among experts, the decision makers are not obligated to select the most conservative, environmentally protective, or liberal viewpoint. They may give more weight to the views of one expert over another and need not resolve a dispute among experts. In their proceedings, the decision makers must consider the comments received and address the objections, but need not follow said comments or objections so long as they state the basis for their decision and that decision is supported by substantial evidence.

1.7.4 CEQA and NEPA Baselines

To determine significance, the recommended plan and its alternatives are compared to a baseline condition. The difference between the recommended plan and its alternatives and the baseline is then compared to a threshold to determine if the difference is significant. CEQA and NEPA use different baseline conditions from which to determine significance. The CEQA and NEPA baselines used to analyze the recommended plan and its alternatives are presented below.

1.7.4.1 CEQA Baseline

Section 15125 of the CEQA Guidelines requires that an EIR include a description of the physical environmental conditions in the vicinity of a proposed project that exist at the time the NOP is published. This environmental setting will normally serve as the baseline by which the lead agency determines whether an impact is significant. The lead agency may also consider a baseline condition that better reflects fluctuations resulting from cyclical trends, such as drought and wet weather. Because wastewater flows are subject to such variances, the baseline conditions for the JOS are representative of aggregate data collected from recent years prior to the release of the NOP. For the conveyance system, the water reclamation plants (including wastewater treatment and WRP effluent management), and the JWPCP (including solids processing, biosolids management, and JWPCP effluent management), the baselines are as described in Section 2.2.4.

The CEQA baseline represents the environmental setting at a fixed point in time, which can differ from a no-project alternative. A no-project alternative allows for growth at the project site that would likely occur without any required additional approvals. The No-Project Alternative for the Clearwater Program is described in Chapter 3.

1.7.4.2 NEPA Baseline

In analyzing a proposed project in a joint CEQA/NEPA format, the Corps must distinguish the scientific and analytical basis for its decisions from the CEQA lead agency's decision. The NEPA baseline condition for determining significance of impacts is generally determined by examining the full range of construction and operational activities the Sanitation Districts could implement, and are likely to implement, absent a Corps permit under Section 10 of the Rivers and Harbors Act, Section 404 of the CWA, and Section 103 of the Marine Protection, Research, and Sanctuaries Act. Therefore, the NEPA baseline in general is identical to baseline conditions associated with the No-Federal-Action Alternative.

Unlike the CEQA baseline, which is typically defined by environmental conditions at a point in time, the NEPA baseline is not bound to a "no-growth" scenario. For the Clearwater Program EIR/EIS, the NEPA baseline represents anticipated conditions at the year 2022, when construction of project elements identified as part of the Corps' NEPA scope of analysis, as described in Section 3.5 and graphically depicted on Figure 3-16, is expected to conclude.

Whenever possible, the Corps and the Sanitation Districts have relied on empirical data and best professional judgment to identify future conditions. For resources in which future conditions are identified, the NEPA baseline encompasses the No-Federal-Action Alternative and any identified conditions. For resources in which future conditions are not identified, the NEPA baseline is identical to the No-Federal-Action Alternative.

1.7.5 Duty to Mitigate

Mitigation measures must meet certain requirements to be considered adequate. Mitigation should define feasible actions that would improve adverse environmental conditions, be specific, and be measurable to allow monitoring of their implementation. Mitigation measures that only require further studies or consultation with regulatory agencies, are not tied to a specific action, and/or defer mitigation until some future time, should be avoided. Accordingly, effective mitigation measures should clearly explain what the objectives are, how a given measure should be implemented, who is responsible for its implementation, and where and when the mitigation would occur. Finally, mitigation measures must be enforceable, meaning that the lead agency must ensure that the measures will be imposed through appropriate permit conditions, agreements, or other legally binding instruments.

1.7.5.1 Mitigation Under CEQA

According to CEQA Guidelines Section 15126.4(a), each significant impact identified in an EIR must include a discussion of feasible mitigation measures that would avoid or substantially reduce the significant environmental effect. To reduce significant effects, mitigation measures must avoid, minimize, rectify, reduce, eliminate, or compensate for a given impact of a proposed project.

1.7.5.2 Mitigation Under NEPA

NEPA requires that mitigation and other conditions established in the environmental impact statement or during its review and committed as part of the ROD shall be implemented by the lead agency or other appropriate consenting agency (40 CFR Section 1505.3). In addition, NEPA requires that a monitoring and enforcement program be adopted and summarized where applicable for any mitigation identified in the ROD (40 CFR Section 1505.2(c)). While the Corps would identify and analyze impacts within its NEPA scope of analysis, the Corps typically limits the placement of special conditions and mitigation measures in its permits for activities in areas within the Corps' geographical jurisdiction as identified in Chapter 3. The Corps cannot constrain operations outside its jurisdiction where, absent the Corps' permits for construction in waters of the U.S., the federal government has no authority over operations that could otherwise occur. For upland indirect and/or cumulative effects within the Corps' NEPA scope of analysis (i.e., traceable to the issuance of a permit), the Corps would identify mitigation measures. However, the Corps would evaluate whether sufficient federal control and responsibility exists in determining whether special conditions in the Corps' permit for upland impacts are warranted.

1.7.5.3 Authority

CEQA grants a public agency the authority to require feasible changes that would substantially lessen or avoid significant effect on the environment associated with all activities involved in a project (CEQA Guidelines Section 15041). However, public agencies do not have unlimited authority to impose such mitigation. An agency may exercise only those express or implied powers provided by law, aside from those provided by CEQA. If another law grants an agency discretionary power, CEQA authorizes its use (CEQA Guidelines Section 15040).

In addition to the CEQA requirements, the U.S. Constitution limits an agency's authority to impose conditions to only those situations in which there is a clear and direct connection (*nexus* in legal terms) between a project impact and the mitigation measure. Finally, there must be a reasonable balance between the impact caused by a proposed project and the mitigation measure imposed upon the project applicant. A project applicant cannot be forced to pay more than its fair share of the mitigation, which should be roughly proportional to the impacts caused by a proposed project.

1.7.6 Requirements to Evaluate Alternatives

According to CEQA and NEPA regulations, the alternatives section of an EIR/EIS is required to:

- Rigorously explore and objectively evaluate all reasonable alternatives
- Include reasonable alternatives not within the lead agency's jurisdiction or congressional mandate, if applicable
- Include a no-project alternative and no-federal-action alternative
- Develop substantial treatment to each alternative, including the recommended plan, so that reviewers may evaluate its comparative merits
- Identify the lead agency's preferred alternative
- Include appropriate mitigation measures (when not already part of the alternatives)
- Present the alternatives that were eliminated from detailed study and briefly discuss the reasons for elimination

The CEQA Guidelines (Section 15126.6) and NEPA (40 CFR Section 1502.14[a]) require that an EIR and an EIS, respectively, describe a range of reasonable alternatives to a proposed project or to the location of a proposed project that could feasibly attain most of the basic objectives of the proposed project but would avoid or substantially lessen any significant environmental impacts. According to the CEQA Guidelines, the EIR should compare merits of the alternatives and determine an environmentally superior alternative. Chapter 3 of this EIR/EIS sets forth potential alternatives to the recommended plan and evaluates their suitability.

Alternatives for an EIR and EIS usually take the form of no-project, no-federal-action, reduced project size, different project design, and/or suitable alternative project sites (40 CFR Section 1502.14[c]). An EIR is governed by the *rule of reason* that requires the identification of only those alternatives necessary to permit a reasoned choice between the alternatives and the recommended plan. For an EIS, the range of alternatives discussed need not be beyond a reasonable range (40 CFR Section 1502.14[a]). An EIR and an EIS need not consider an alternative that would be infeasible. CEQA Guidelines Section 15126.6 explains that the evaluation of project alternative feasibility can consider site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site. The EIR is also not required to evaluate an alternative that has an effect that cannot be reasonably identified or that has remote or speculative implementation, and that would not achieve the basic project objectives. Additionally, for activities that result in the discharge of dredged or fill material in waters of the U.S. pursuant to Section 404 of the CWA, the U.S. Environmental Protection Agency (EPA) Section 404(b)(1) guidelines and the Corps' regulations (33 CFR Part 320-330) require the Corps to only issue a permit for the least environmentally damaging practicable alternative (focusing primarily on impacts to aquatic resources), where *practicable* is defined in terms of cost, logistics, and technology, that still meets the overall project purpose. To comply with these guidelines, the Corps

typically analyzes alternatives that reduce impacts to aquatic resources through alternative configurations, locations, construction methods, and/or project footprints.

1.7.7 State Revolving Fund Requirements

The State Water Resources Control Board (SWRCB) will use this document to ensure compliance with the state revolving fund (SRF) loan requirements. The SRF loan program is partially funded by the EPA and is thus subject to federal environmental regulations. The EPA has chosen to use CEQA as the compliance base for California's SRF Loan Program. In addition to CEQA, the EPA requires compliance with specific federal environmental regulations, which includes the federal Endangered Species Act, the National Historic Preservation Act, and the General Conformity Rule for the federal Clean Air Act (CAA). These requirements are satisfied in this document through compliance with NEPA, which will be handled by the Corps as the federal lead agency because the Corps has direct permitting authority over the Clearwater Program, whereas the EPA has indirect involvement through the SWRCB's SRF loan program.

1.8 CEQA/NEPA Processes After Release of the Draft EIR/EIS

1.8.1 Distribution of the Draft EIR/EIS

The draft EIR/EIS for the Clearwater Program was distributed to the public and agencies on February 10, 2012. Hard copies and/or compact discs of the draft EIR/EIS were distributed to various government agencies, organizations, and individuals. Hard copies of the draft EIR/EIS were also made available for review at the Sanitation Districts' offices in Whittier and at three public libraries (Carson Regional Library and the San Pedro Branch and Wilmington Branch of the Los Angeles Public Library). In addition, the draft EIR/EIS was made available online at the Sanitation Districts' website (http://www.lacsd.org/) and the Clearwater Program website (http://www.ClearwaterProgram.org).

On February 10, 2012, a notice of completion of the draft EIR was sent to the California Governor's Office of Planning and Research, State Clearinghouse and a notice of availability (NOA) for the draft EIR was posted at the County Clerk's office for Los Angeles County and mailed to an extensive mailing list of approximately 4,000 agencies, interest groups, and the general public. An NOA for the draft EIS was published in the Federal Register on February 13, 2012. Comments on the draft EIR/EIS were due on April 10, 2012, resulting in a 60-day review period for the draft EIR and a 57-day review period for the draft EIS. (See Appendix 1-B for the notices.)

The Sanitation Districts and the Corps held a joint public hearing to receive comments on both the draft EIR and draft EIS at the Crowne Plaza Los Angeles Harbor Hotel in San Pedro on March 8, 2012. The Sanitation Districts also conducted two additional public hearings on the draft EIR at the Sanitation Districts' offices near the city of Whittier on March 6, 2012, and the Carson Community Center in the city of Carson on March 7, 2012. (See Appendix 1-B for additional details on the public hearings, and Appendix 28-A for transcripts of the public hearings.)

1.8.2 Comments on the Draft EIR/EIS

The public comment and response component of the CEQA/NEPA process serves an essential role. It allows the respective lead agencies to assess the impacts of a project based on the analysis of other responsible, concerned, or adjacent agencies and interested parties, and it provides the opportunity to

amplify and better explain the analyses that the lead agencies have undertaken to determine the potential environmental impacts of a project. To that extent, responses to comments are intended to provide complete and thorough explanations to commenting agencies and individuals, and to improve the overall understanding of the project for the decision makers.

The Sanitation Districts and the Corps received 52 comments in the form of letters, emails, and oral statements during the public hearings on the draft EIR/EIS. The responses to each of these comments are found in Chapter 28 of this final EIR/EIS. As necessary, revisions were made to the EIR/EIS, as documented in Chapter 29. None of the revisions result in changes to the significance findings presented in the draft EIR/EIS.

1.9 EIR/EIS Organization

This EIR/EIS has been organized to ensure that the reader can easily obtain fundamental information about the recommended plan and its specific impacts. Impacts are covered under each of the environmental resource areas in Chapters 4 through 20. In general, the scope of the CEQA impact analysis is greater than the NEPA analysis; therefore, the CEQA analysis is presented first to allow a more efficient presentation of the NEPA impacts. Detailed technical and additional background information are provided in the appendices. Each of the chapters in this document is briefly described in Table 1-4.

Table 1-4. Organization and Contents of This EIR/EIS

EIR/EIS Chapter	Description
Executive Summary (Under separate cover)	Summarizes the recommended plan and its alternatives, potential significant impacts and mitigation measures, the environmentally superior alternative (in accordance with CEQA) and the environmentally preferred alternative (in accordance with NEPA), public comments and concerns, and unresolved issues and areas of controversy.
Chapter 1 – Introduction	Describes the purpose, need, and objectives of the recommended plan; the intended uses of the document and authorizing actions; the relationship to existing plans and policies; the scope and content of the document; and the organization of the document.
Chapter 2 – Existing Facilities	Describes the existing environmental and operational conditions of existing facilities.
Chapter 3 – Alternatives Description	Describes the alternatives evaluated in this document. Also introduces the methodology and terminology used for the environmental analysis.
Chapters 4 through 20 – Environmental Resource Analyses	Describes, for each environmental resource area, the environmental setting (including the baseline conditions), the regulatory setting, the criteria for judging whether an impact is significant, the impact assessment methodology, the impacts that would result from the each alternative, the applicable mitigation measures that would eliminate or reduce significant impacts, and the mitigation monitoring requirements.
Chapter 21 – Cumulative and Growth-Inducing Impacts	Provides a summary of significant cumulative impacts and whether or not each alternative contributes to the significant impacts. Also presents whether or not each alternative would result in growth-inducing impacts.
Chapter 22 – Comparison of Alternatives	Compares the significant environmental impacts of each alternative and identifies the superior and environmentally preferred alternative.
Chapter 23 – Significant Irreversible Impacts	Describes the significant irreversible changes associated with the preferred alternative.
Chapter 24 – List of Federal and State Permits for All Alternatives	Provides a list of federal and state permits potentially required for the Clearwater Program.
Chapter 25 – References	Identifies the documents used in preparing this EIR/EIS.
Chapter 26 – List of Preparers and Contributors	Lists the individuals involved in preparing this EIR/EIS.
Chapter 27 – Abbreviations	Provides the full names for acronyms and abbreviations used in this document.

Table 1-4 (Continued)

EIR/EIS Chapter	Description
Chapter 28 – Responses to Comments	Provides copies of all comments received on the draft EIR/EIS and responses to each comment.
Chapter 29 – Changes and Errata	Provides a list of all substantive changes to the EIR/EIS between the draft EIR/EIS and the final EIR/EIS.
Appendices (Under separate cover)	Present additional background information and technical detail for several of the resource areas.

Chapter 2
EXISTING FACILITIES

2.1 Sanitation Districts of Los Angeles County

The Sanitation Districts of Los Angeles County (Sanitation Districts) serve the regional wastewater and solid waste management needs of approximately 5.4 million people in Los Angeles County. The Sanitation Districts' service area, as shown on Figure 1-1, covers approximately 820 square miles and encompasses 78 cities and unincorporated territory within the county. The 23 separate districts that comprise the Sanitation Districts work cooperatively under a Joint Administration Agreement with one administrative staff headquartered near the city of Whittier. The individual districts operate and maintain their own portions of the collection system. Seventeen of the 23 districts with a population of 4.8 million people, collectively known as the Joint Outfall Districts (JOD), are served by the Joint Outfall System (JOS). Cities serviced by the Sanitation Districts are identified in Table 2-1.

Table 2-1. Cities Located Within the Sanitation Districts' Service Area

Joint Outfall District Cities			
Alhambra	Downey	Lomita	Rosemead
Arcadia	Duarte	Long Beach	San Dimas
Artesia	El Monte	Los Angeles	San Gabriel
Azusa	El Segundo	Lynwood	San Marino
Baldwin Park	Gardena	Manhattan Beach	Santa Fe Springs
Bell	Glendora	Maywood	Sierra Madre
Bell Gardens	Hawaiian Gardens	Monrovia	Signal Hill
Bellflower	Hawthorne	Montebello	South El Monte
Bradbury	Hermosa Beach	Monterey Park	South Gate
Carson	Huntington Park	Norwalk	South Pasadena
Cerritos	Inglewood	Palos Verdes Estates	Temple City
City of Commerce	Irwindale	Paramount	Torrance
City of Industry	La Cañada Flintridge	Pasadena	Vernon
Claremont	La Habra Heights	Pico Rivera	Walnut
Compton	La Mirada	Pomona	West Covina
Covina	La Puente	Rancho Palos Verdes	Whittier
Cudahy	La Verne	Redondo Beach	
Culver City	Lakewood	Rolling Hills	
Diamond Bar	Lawndale	Rolling Hills Estates	
Cities Outside the Joint Outfall System			
Beverly Hills	Palmdale	West Hollywood	
Lancaster	Santa Clarita		

2.2 Joint Outfall System

The JOS is a regional interconnected system that provides wastewater conveyance and treatment, water reuse, and effluent disposal for residential, commercial, and industrial users within the jurisdictions of the JOD.

The JOS can be divided into the following five program components areas:

- Wastewater conveyance and treatment – 480 miles of Joint Outfall (JO) trunk sewers, six upstream water reclamation plants (WRPs), and the Joint Water Pollution Control Plant (JWPCP)
- WRP effluent management – the beneficial reuse of recycled water or the discharge of treated effluent into rivers and creeks
- Solids processing – sludge thickening, sludge stabilization, and sludge dewatering at the JWPCP
- Biosolids management – offsite beneficial use and landfill co-disposal of biosolids
- JWPCP effluent management – the use of two onshore tunnels and four offshore ocean outfalls to convey treated effluent from the JWPCP for discharge to the Pacific Ocean through a system of diffusers

The JOS facilities that constitute each of the program component areas are shown in Table 2-2. The location of the JOS, the existing JOS treatment facilities, and the participating cities within the JOS are identified on Figure 1-2 and Figure 2-1.

Table 2-2. JOS Facilities Addressed Within Each Program Component Area

Program Component Area	JOS Facilities
Wastewater Conveyance and Treatment	Conveyance System WRPs JWPCP
WRP Effluent Management	WRPs
Solids Processing	JWPCP
Biosolids Management	JWPCP
JWPCP Effluent Management	JWPCP

2.2.1 JOS 2010 Master Facilities Plan

In 1995, the Sanitation Districts adopted the JOS 2010 Master Facilities Plan (2010 Plan) (Jones & Stokes 1994). The 2010 Plan was prepared to meet the wastewater management needs until the year 2010 and to provide for full secondary treatment of all ocean discharge as required by a consent decree between the Sanitation Districts, the United States Environmental Protection Agency (EPA), the state of California, the Natural Resources Defense Council, and Heal the Bay. The JWPCP was upgraded to full secondary treatment in 2002.

The population forecasts used for the 2010 Plan were derived from the Southern California Association of Governments 1994 Regional Comprehensive Plan. The 1994 Regional Comprehensive Plan population forecast indicated that the JOS service area would increase to more than 5.2 million people by 2010.

FIGURE 2-1

CLEARWATER Program

Existing Joint Outfall System Regional Setting

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

2.2.2 Service Area Population and Wastewater Flows

The JOS facilities currently serve approximately 4.9 million people. As of 2008, 430 million gallons per day (MGD) of residential, commercial, and industrial wastewater were generated within the JOS. The permitted treatment capacity of the entire JOS is 593 MGD. A detailed description of the existing wastewater flows is provided in Chapter 4 of the Clearwater Program Master Facilities Plan (MFP).

2.2.3 Regional Setting

The JOS is located in the central, southern, and eastern portions of Los Angeles County. Its boundaries extend from the San Gabriel Mountain foothills south to the Palos Verdes Peninsula and San Pedro Bay, and from San Bernardino and Orange Counties west to the cities of Glendale and Los Angeles and to Santa Monica Bay, as shown on Figure 2-1.

The three major rivers in the JOS service area are the Rio Hondo, Los Angeles, and San Gabriel. Major creeks include San Jose and Coyote. The locations of these rivers and creeks are shown on Figure 2-1. The Rio Hondo River flows southwest from its headwaters at the Sawpit Dam into the Los Angeles River, which discharges into the Pacific Ocean. The San Gabriel River flows southwesterly from its headwaters in the San Gabriel Mountains and forms a tidal prism before discharging into the Pacific Ocean at Seal Beach. The tidal prism of the San Gabriel River is the area within the river where freshwater from upstream sources mixes with salt water from the Pacific Ocean.

There are two major spreading grounds in the JOS service area for recharging groundwater into the Los Angeles area groundwater basins. The Rio Hondo Spreading Grounds are located on the Rio Hondo River in the city of Montebello. The San Gabriel Coastal Spreading Grounds are located on the San Gabriel River in the city of Pico Rivera. The locations of these spreading grounds are shown on Figure 2-1. Both of these spreading grounds use Sanitation Districts' recycled water, water imported from the State Water Project, and rainwater to recharge the groundwater basin through percolation.

Six upstream WRPs produce recycled water for beneficial reuse (e.g., landscape irrigation) and are permitted to discharge recycled water into the receiving water bodies discussed above. The locations of the six WRPs are shown on Figure 2-1. The San Jose Creek Water Reclamation Plant (SJCWRP), located in an unincorporated area of Los Angeles near the city of Whittier, discharges into San Jose Creek and the San Gabriel River. The Pomona Water Reclamation Plant (POWRP), located in the city of Pomona, discharges into the south fork of San Jose Creek. The Los Coyotes Water Reclamation Plant (LCWRP), located in the city of Cerritos, discharges into the San Gabriel River. The Long Beach Water Reclamation Plant (LBWRP), located in the city of Long Beach, discharges into Coyote Creek. In addition, a portion of the recycled water is further treated and injected into the ground at the Alamitos Seawater Barrier to prevent saltwater intrusion into the freshwater aquifer. The Whittier Narrows Water Reclamation Plant (WNWRP), located in the city of South El Monte, discharges into the Rio Hondo River, the Rio Hondo Spreading Grounds, and the San Gabriel Coastal Spreading Grounds. The La Cañada Water Reclamation Plant (LACAWRP), located in the city of La Cañada Flintridge, discharges recycled water into irrigation system storage impoundments at a nearby golf course. The final destination for recycled water that is not beneficially reused is the Pacific Ocean, where the Los Angeles and San Gabriel Rivers outlet in the Port of Los Angeles and Seal Beach, respectively.

Solids generated at the six upstream WRPs, as a byproduct of the primary and secondary treatment processes, are returned to the JOS conveyance system for consolidated solids processing at the JWPCP. The JWPCP is located in the city of Carson as shown on Figure 2-1. Once thickened, stabilized, and

dewatered at the JWPCP, the final solids product, called biosolids, is transported via trucks to locations within California and the greater southwest for beneficial use and landfill co-disposal.

After wastewater is treated at the JWPCP, it is conveyed in two onshore tunnels from the west side of the JWPCP across Lomita Boulevard and along Vermont and Western Avenues south to Royal Palms Beach. There, the two onshore tunnels converge into a subterranean manifold structure, which connects the onshore tunnels to the offshore outfalls. The outfalls, which consist of seafloor piping, extend from the shore to the diffuser area. The diffusers, which also consist of seafloor piping, have ports that allow the evenly distributed release of secondary-treated effluent into the ocean. Currently, there are four offshore outfalls and diffusers, but only two operate on a regular basis. These outfalls and diffusers extend into the Pacific Ocean approximately 1.5 miles to the south of the Palos Verdes Peninsula. The existing ocean discharge system is shown on Figure 2-2.

2.2.4 Existing Joint Outfall System Facilities

2.2.4.1 Conveyance System

The Sanitation Districts own, operate, and maintain over 1,230 miles of sewers within the JOS. There are approximately 8,500 miles of sewers feeding into the Sanitation Districts' system that are owned and operated by local cities and Los Angeles County. The backbone of the Sanitation Districts' JOS conveyance system consists of nine large, main trunk sewers, referred to as the JO trunk sewers, which collect wastewater from smaller district trunk and local sewers for conveyance to the six upstream WRPs and the JWPCP.

Higher quality residential wastewater is conveyed to the upstream WRPs, where it is treated to a level suitable for reuse or for discharge into nearby rivers and creeks. All solids removed at the six upstream WRPs are returned to the sewer system and conveyed to the downstream JWPCP for processing.

The JO trunk sewers were the focus of the analysis in the MFP due to their critical role in conveying wastewater flow throughout the entire JOS. The lengths of the JO trunk sewer lines are summarized in Table 2-3 and depicted on Figure 2-3.

Table 2-3. Joint Outfall Trunk Sewer Summary

Joint Outfall (JO) Trunk Sewers	Length (miles)
JO A	108
JO B	102
JO C	45
JO D	23
JO E	16
JO F	24
JO G	13
JO H	114
JO J	35
Total	480

The Sanitation Districts regularly monitor and evaluate the condition of individual sewer segments using closed circuit television, physical inspections, and flow meters. Identified system deficiencies are addressed through sewer relief, repair, rehabilitation, and replacement projects. Sewer pipes are generally

FIGURE 2-2

CLEARWATER Program

Existing Ocean Discharge System

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

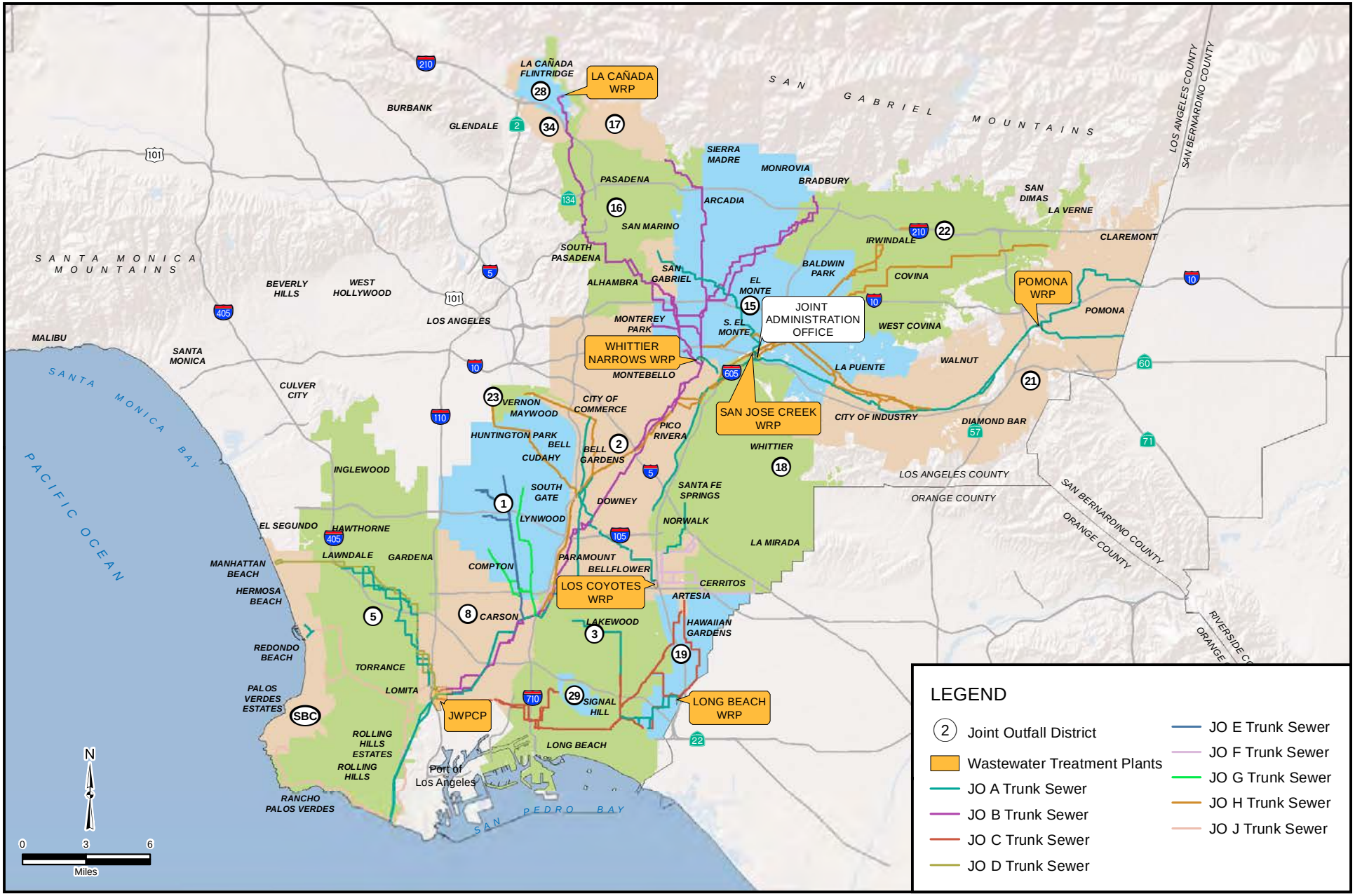


FIGURE 2-3

CLEARWATER Program

Joint Outfall Trunk Sewer System

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

located from 5 to 25 feet underground and within public rights-of-way. Aside from manhole covers and pump stations, there is little physical or visual evidence of the system above ground.

Prior to each wet season, the JOS system configuration is slightly modified to take advantage of available sewer capacity by adjusting stop logs, gates, and other flow control devices in the system.

2.2.4.2 Water Reclamation Plants

Wastewater treatment at the WRPs described herein includes primary, secondary, and tertiary treatment.

- Primary treatment – occurs in settling tanks where the solid materials settle to the bottom, floatable materials are skimmed from the top and both are removed for treatment.
- Secondary treatment – microorganisms (mainly bacteria) are added to the wastewater in aeration tanks to feed on the remaining organic materials with the aid of air that is bubbled through the water. The organisms are removed from the water in secondary settling tanks and returned to the aeration tanks to begin the process again.
- Tertiary treatment – filters made of coal, sand, and gravel, remove nearly all of the remaining suspended materials. A disinfectant is added to kill any remaining bacteria, viruses, or other microorganisms.

The six WRPs located upstream of the JWPCP produce high quality treated water for reuse and provide hydraulic relief for the downstream conveyance, treatment, and disposal system. In addition to the discharge requirements for various constituents, each of the WRPs has a permitted monthly average dry weather flow rate. This capacity cannot be exceeded without a change to the facility's National Pollutant Discharge Elimination System permit. Treated flows for individual WRPs are monitored relative to the permitted capacity. Generally, WRP flows fluctuate over a period of years reflecting different conditions within the JOS service area. As an example, during low rainfall periods, flows may be reduced. During periods of higher precipitation, flows can increase significantly. The existing permitted capacities are summarized in Table 2-4. These capacities are based on the design capacity of the plant. Each plant has a modular design that sets the basis for operations and maintenance of the plant, as well as providing the basis for any incremental expansions in the future.

Table 2-4. WRP Permitted Capacities, Solids Conveyance, and Effluent Management Practices

Water Reclamation Plant	Permitted Capacity (MGD)	Solids Conveyance Joint Outfall (JO) Trunk Sewer	Groundwater Replenishment[a] (MGD)	Other Reuse[a] (MGD)
SJCWRP	100.0	JO H	16–36	1–9[b]
POWRP	15.0	JO A	2–7	0–6
LCWRP	37.5	JO F	0	2–6[b]
LBWRP	25.0	JO C	0	1–10
WNWRP	15.0	JO B	0.4–7	0–2
LACAWRP	0.2	JO B	0	0.1

[a] Based on recycled water and reuse flows for calendar year 2008.

[b] The Central Basin Municipal Water District recycled water distribution system receives a combination of recycled water from both the SJCWRP and LCWRP, which was accounted for under the LCWRP in the 2008 Annual Monitoring Report. However, this table accounts for the recycled water under the SJCWRP because most of the recycled water delivered through the system actually originated from the SJCWRP.

Reuse is an integral part of WRP effluent management. Recycled water produced at the WRPs is utilized for beneficial reuse either through groundwater replenishment via discharge to the San Gabriel and Rio

Hondo tributaries, which flow to unlined portions of the receiving water or designated spreading grounds, or by providing recycled water to numerous water wholesalers or purveyors for distribution. These wholesalers and purveyors make recycled water available to approximately 550 individual reuse sites in 27 cities for different applications that include irrigation, industrial use, agriculture, and groundwater recharge. The remaining recycled water is discharged into the lined portions of the receiving water bodies.

San Jose Creek Water Reclamation Plant

The SJCWRP, shown on Figure 2-4, is located at 1965 Workman Mill Road on a 51-acre site within unincorporated Los Angeles County, near the city of Whittier. The SJCWRP is bisected by Interstate (I-) 605 into two independent, but hydraulically interconnected, plants known as SJCWRP East and SJCWRP West. The site is bounded by San Jose Creek, State Route (SR-) 60, Workman Mill Road, and the San Gabriel River. The Sanitation Districts' Joint Administration Office is also located at this site. Additional facilities at the SJCWRP include a laboratory, equipment storage, and administrative offices. Properties managed by the city of Los Angeles Department of Water and Power and the United States Army Corps of Engineers run along the northern side of the SJCWRP. Land uses surrounding the plant consist mostly of low-density residential areas that are intermixed with an industrial area to the south and open recreational space to the northeast.

As shown in Table 2-4, the permitted capacity of the SJCWRP is 100.0 MGD (62.5 MGD at SJCWRP East and 37.5 MGD at SJCWRP West). The SJCWRP consists of eight treatment modules, each having a capacity of 12.5 MGD. All solids generated by the plant are returned to the JO H trunk sewer for conveyance to the JWPCP for processing. An annual (2008) average of approximately 31 MGD of recycled water is reused at approximately 30 different sites. Reuse can vary from month to month and range from 18 to 41 MGD. Groundwater recharge is the largest beneficial use, with approximately 24 of the 31 MGD used for this purpose. The remaining reuse is mostly landscape irrigation. Groundwater recharge is accomplished by sending recycled water to the San Gabriel Coastal Spreading Grounds, the Rio Hondo Spreading Grounds, San Jose Creek, or the San Gabriel River. The remaining recycled water is discharged to the lined portion of the San Gabriel River approximately 8 miles south of the plant.

Pomona Water Reclamation Plant

The POWRP, shown on Figure 2-5, is located at 295 Humane Way on a 14-acre site in the city of Pomona. The POWRP is bounded by a railroad right-of-way and industrial uses to the north, the Humane Society and Humane Way to the east, and Elephant Hill to the west. Residential areas may be found farther north of the railroad and farther south of West Mission Boulevard.

As shown in Table 2-4, the permitted capacity of the POWRP is 15.0 MGD. The POWRP consists of three treatment modules, each having a capacity of 5.0 MGD. All solids generated by the plant are returned to the JO A trunk sewer for conveyance to the JWPCP for processing. An annual (2008) average of approximately 8 MGD of recycled water is reused at over 190 different sites. Reuse can vary from month to month and range from 7 to 8 MGD. Approximately 4 MGD are used for purposes such as irrigation and dust control. This reuse varies month to month from 0 to 6 MGD. The Pomona Water Department is the largest beneficial user, followed by the Walnut Valley Water District, the Spadra Landfill, and the Rowland Water District. Approximately 2 to 7 MGD of recycled water goes to groundwater replenishment through discharge to San Jose Creek, which ultimately flows into the San Gabriel River. Sections of San Jose Creek where this discharge occurs, and the section of the San Gabriel River into which San Jose Creek flows, are unlined allowing percolation of all of the recycled water into the groundwater below. The remainder of the recycled water is used for onsite purposes, such as wash water.

FIGURE 2-4

CLEARWATER Program

San Jose Creek Water Reclamation Plant

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 2-5

CLEARWATER Program

Pomona Water Reclamation Plant

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

Los Coyotes Water Reclamation Plant

The LCWRP, shown on Figure 2-6, is located at 16515 Piuma Avenue on a 34-acre site in the city of Cerritos. The treatment facilities occupy the southern portion of the site. The Iron-Wood Nine Golf Course occupies the remaining area. The LCWRP is bounded to the north by a Southern California Edison property, to the south by SR-91, to the east by I-605, and to the west by the San Gabriel River. Land uses surrounding the plant consist of light industrial areas to the north and south, and residential areas to the east and west. Caruthers Park is located west of the plant.

As shown in Table 2-4, the permitted capacity of the LCWRP is 37.5 MGD. The LCWRP consists of three treatment modules, each having a capacity of 12.5 MGD. All solids generated by the plant are returned to the JO F trunk sewer for conveyance to the JWPCP for processing. An annual (2008) average of approximately 3 MGD of recycled water is beneficially reused at over 260 reuse sites. Reuse includes landscape irrigation of schoolyards, golf courses, parks, nurseries, and greenbelts, and industrial use at local companies for carpet dying and concrete mixing. Reuse can vary from month to month and range from 2 to 6 MGD. The Central Basin Municipal Water District is the largest beneficial user, followed by the cities of Cerritos, Lakewood, and Bellflower. The remaining recycled water is discharged to the lined portion of the San Gabriel River that flows directly to the Pacific Ocean.

Long Beach Water Reclamation Plant

The LBWRP, shown on Figure 2-7, is located at 7400 E. Willow Street on a 17-acre site in the city of Long Beach. The LBWRP is bounded by Willow Street to the north, Coyote Creek to the south and east, and the San Gabriel River to the west. Land uses surrounding the plant include the Water Replenishment District's Leo J. Vander Lans Advanced Water Treatment Facility (AWTF) and El Dorado Park to the north, El Dorado Park Golf Course to the west, and residential areas to the south and east.

As shown in Table 2-4, the permitted capacity of the LBWRP is 25.0 MGD. The LBWRP consists of two treatment modules, each having a capacity of 12.5 MGD. All solids generated by the plant are returned to the JO C trunk sewer for conveyance to the JWPCP for processing. An annual (2008) average of approximately 6 MGD of recycled water is beneficially reused at over 50 sites. Reuse can vary from month to month and range from 1 to 10 MGD. Approximately 4.5 of the 6 MGD are utilized by the city of Long Beach for landscape irrigation of schoolyards, golf courses, parks, and greenbelts. Approximately 1.5 MGD is processed at the AWTF and injected into the Alamitos Seawater Barrier to prevent saltwater intrusion into the groundwater basin. The remaining recycled water is discharged into the concrete-lined portion of Coyote Creek, about 2,200 feet upstream from its confluence with the San Gabriel River. The San Gabriel River is lined from Coyote Creek confluence to the river estuary.

Whittier Narrows Water Reclamation Plant

The WNWRP, shown on Figure 2-8, is located at 301 N. Rosemead Boulevard on a 27-acre site near the city of South El Monte. The WNWRP surroundings are dominated by the Whittier Narrows Recreation Area to the north, undeveloped industrial areas to the south, Legg Lake and nurseries to the east, and largely unused utility areas to the west. The Rio Hondo River transects the northwest corner of the site.

As shown in Table 2-4, the permitted capacity of the WNWRP is 15.0 MGD. The WNWRP consists of three treatment modules, each having a capacity of 5.0 MGD. All solids generated by the plant are returned to the JO B trunk sewer for conveyance to the JWPCP for processing. An annual average of approximately 6 MGD of recycled water is reused at three different sites. Reuse can vary from month to month and range from 0 to 8 MGD. Groundwater recharge is currently the largest beneficial use, with approximately 5 of the 6 MGD used for this purpose. The remaining reuse is landscape irrigation. Recycled water is discharged to the Rio Hondo River, which flows south to the Rio Hondo Spreading Grounds. At times, recycled water is diverted to the San Gabriel Coastal Spreading Grounds.

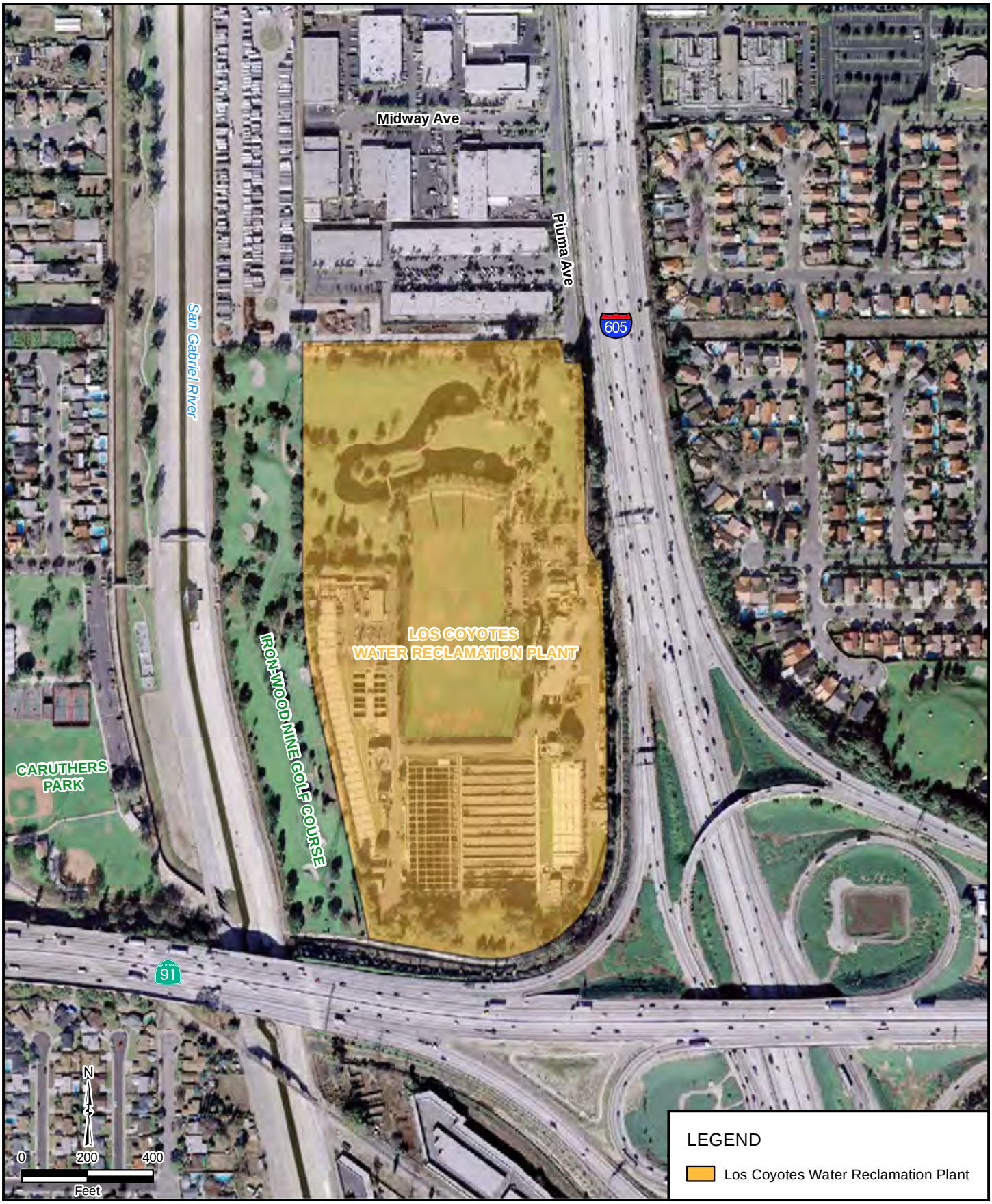


FIGURE 2-6

CLEARWATER Program

Los Coyotes Water Reclamation Plant

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

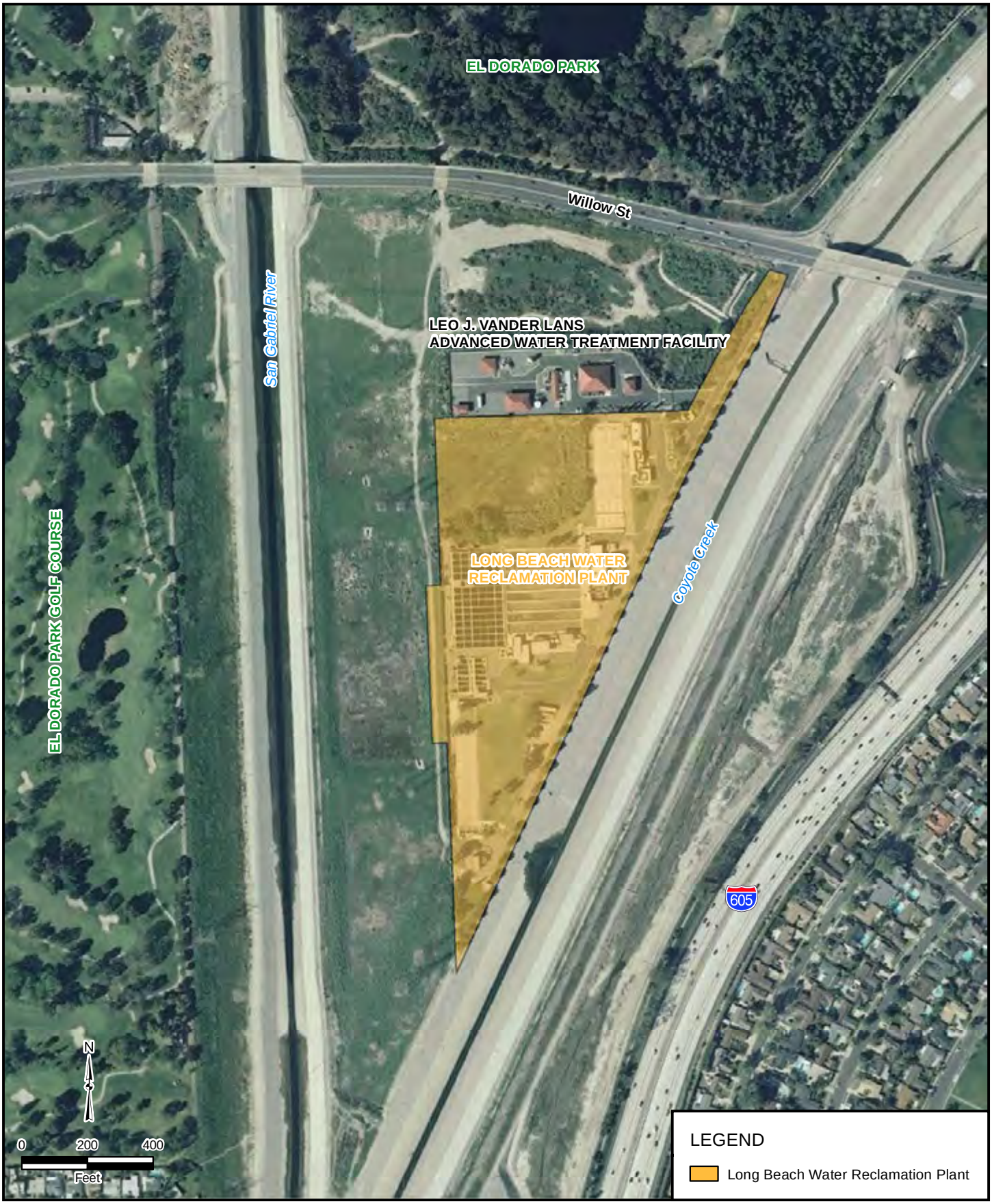


FIGURE 2-7

CLEARWATER Program

Long Beach Water Reclamation Plant

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011

FIGURE 2-8

CLEARWATER Program

Whittier Narrows Water Reclamation Plant

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

Additionally, the Upper San Gabriel Valley Municipal Water District distributes recycled water for irrigation.

La Cañada Water Reclamation Plant

The LACAWRP, shown on Figure 2-9, is located at 533 Meadowview Drive on approximately one-third acre on the grounds of the La Cañada Flintridge Country Club. As shown in Table 2-4, the permitted capacity of the LACAWRP is 0.2 MGD. Solids generated by this plant are placed in an adjacent sewer, which connects to the JO B trunk sewer for conveyance to the JWPCP for processing. All of the recycled water flows into irrigation system storage impoundments on the 105-acre golf course. If the golf course is unable to take the recycled water (e.g., during periods of extended wet weather), flow from this plant can be partially, or entirely, bypassed to an adjacent sewer. No changes are proposed for this facility; therefore, it is not discussed in subsequent chapters.

2.2.4.3 Joint Water Pollution Control Plant

The JWPCP, shown on Figure 2-10, is located at 24501 S. Figueroa Street on an approximately 400-acre site in the city of Carson. It is generally bordered by West Sepulveda Boulevard to the north, Main Street to the east, West Lomita Boulevard to the south, and I-110 to the west. The Sanitation Districts lease land to the north of West Sepulveda Boulevard to landscaping and nursery businesses, to the east of Main Street to the Home Depot Retail Center, and to the south of West Lomita Boulevard to the Wilmington Jaycee Foundation for the Wilmington Athletic Complex and to the Wilmington Boys and Girls Club. These surrounding land uses provide a buffer between the JWPCP and more distant residential uses. In addition, the Sanitation Districts recently restored and dedicated the 17-acre Bixby Marshland located on the northwest corner of the JWPCP.

The surrounding land uses outside of the JWPCP property boundaries include commercial and retail to the east of Main Street, and residential uses to the south of West Lomita Boulevard. Wilmington Middle School is located approximately 0.25 mile from the southeastern property boundary of the JWPCP at the intersection of East Lomita Boulevard and Gulf Avenue.

The JWPCP is currently permitted to treat an average of 400 MGD of wastewater. The JWPCP provides primary and secondary treatment with disinfection. The JWPCP contains eight secondary treatment modules, each having a capacity of 50.0 MGD. Additionally, the JWPCP houses laboratory, equipment maintenance and storage, energy recovery, solids processing, and administrative and field office facilities.

Solids Processing

The solids generated at each of the six upstream WRPs during the wastewater treatment process are returned to the JO trunk sewers for conveyance to the JWPCP for centralized solids processing. The existing solids processing facilities are summarized in Table 2-5. The locations of the existing solids processing facilities at the JWPCP are shown on Figure 2-10.

FIGURE 2-9

CLEARWATER Program

La Cañada Water Reclamation Plant

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 2-10

CLEARWATER Program

Joint Water Pollution Control Plant

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

Table 2-5. Existing Solids Processing Facilities

Process	Definition	Type	Units	Total Capacity
Sludge Thickening	Thickens waste activated sludge to reduce the overall volume of solids	Dissolved air flotation thickeners	6	11 MGD
Sludge Stabilization	Stabilizes and reduces pathogens to eliminate offensive odors and inhibit, reduce, or eliminate the potential for putrefaction; produces gas for power production	Anaerobic digesters	24	5 MGD
Sludge Dewatering	Removes liquid to further reduce volume of material and form it into a cake solid	Dewatering centrifuges	35	6 MGD
Digester Gas Handling and Power Generation	Generates electricity and power for the JWPCP as well as back to the grid from the gas produced from sludge stabilization	Combined cycle power plant with gas turbine generators and a steam turbine generator	1	Produces 22–26 MW

MW = megawatts

Sludge Thickening

The sludge thickening process is used to significantly reduce the volume of waste activated sludge (WAS). WAS is thickened at the site with dissolved air flotation thickeners. There are a total of six dissolved air flotation tanks that can process approximately 500,000 pounds per day of WAS. After the WAS is thickened, it is termed thickened waste activated sludge (TWAS).

Sludge Stabilization

The sludge stabilization process is used to reduce pathogens, eliminate offensive odors, and reduce the potential for putrefaction. Anaerobic digestion is used to stabilize primary sludge and TWAS. Approximately 50 percent of the organic matter is biologically converted to digester gas. The anaerobic digesters are operated as single-stage, high-rate units that use steam injection for heating and gas recirculation for continuous mixing. Digesters are heated to the operating temperature of 96°F to optimize performance. There are 24 conventional, circular digesters, each with a volume of approximately 500,000 cubic feet. This results in a combined volume of nearly 90 million gallons. The average detention time is from 15 to 18 days with 22 units in service. Typically, at any time, there may be one digester out of service for cleaning and another out of service on standby.

Sludge Dewatering

Sludge dewatering significantly reduces the volume of the material, as well as changes the form of the material from a liquid to a cake solid, also known as biosolids. This volume reduction and form change allows the subsequent transport of biosolids by truck.

Centrifuges are used to dewater the stabilized sludge into biosolids. The biosolids are transported by belt conveyors from the centrifuges to silos for storage and then loaded into trucks for hauling. There are a total of 18 silos at the JWPCP with a storage capacity of approximately 500 wet tons per silo, resulting in a total storage capacity of approximately 9,000 wet tons. At the 2007 biosolids generation rate of 1,450 wet tons per day (wtpd), this provides close to 6 days of storage. There are three separate truck loading stations serving the JWPCP with loading rates of approximately 175 wet tons per hour. There are also various odor control facilities to control biosolids odors at the JWPCP.

Digester Gas Handling and Power Generation

The gas produced during the anaerobic digestion process is collected and purified to generate electricity at the JWPCP. A combined cycle power plant uses gas turbine generators to produce approximately 18 to 20 megawatts (MW) of electricity and a steam turbine generator to produce approximately 4 to 6 MW of electricity. The electricity generated from this system is used on site. Heat is recovered from the

combustion turbines and used to generate steam. The low-grade residual steam and hot water from the steam turbine, as well as steam from the boilers, are used for digester heating. The gas turbine generators were replaced and upsized in 2001. The steam turbine generator is being replaced with completion expected in 2011. There are also flare stations at the JWPCP to assist in the management of the digester gas.

Biosolids Management

The Sanitation Districts recycle biosolids for beneficial use along with co-disposal at a landfill. As of 2007, the JWPCP produces approximately 1,450 wtpd of biosolids. On an annual basis, this is approximately 530,000 wet tons per year. The location of the biosolids management facilities at the JWPCP is shown on Figure 2-10.

The EPA regulates biosolids pursuant to Code of Federal Regulations (CFR), Title 40, Part 503. The standards are applicable to land application, surface disposal, and incineration. For disposal in a municipal solid waste landfill, the biosolids must meet standards indicated in 40 CFR Part 258. Biosolids generated at the JWPCP meet EPA Class B pathogen reduction requirements through time and temperature requirements for anaerobic digestion. Vector attraction reduction requirements are met by reducing the mass of volatile solids during anaerobic digestion. JWPCP biosolids are sampled monthly and analyzed for total metals concentrations. Since the 1993 promulgation of the federal rules governing biosolids management, the JWPCP biosolids have consistently complied with the most stringent requirements related to metals concentrations. Because the biosolids generated at the JWPCP meet all federal requirements, they can generally be beneficially used at any location.

Beneficial Use

Beneficial use includes a diversified portfolio of options. Biosolids from the JOS are processed, temporarily stored, and transported from the JWPCP to various regional locations as shown on Figure 2-11 and described in Table 2-6. These beneficial use opportunities include:

- Composting and production of soil amendment products marketed for bulk and bagged sale
- Composting and land application
- Lime stabilization and land application
- Land application of dewatered Class B biosolids
- Incineration, pyrolysis, gasification, vitrification, emissions control, or other approved technologies to produce renewable fuel or other usable end products

Landfill Co-Disposal

Co-disposal of biosolids with municipal solid waste at landfills, as shown in Table 2-6, will continue to serve as an option for biosolids management. Landfills utilized will be appropriately permitted for biosolids co-disposal. While the focus of biosolids management will continue to be beneficial use, landfilling provides an important option. In 2007, approximately 10 percent of the total biosolids produced at the JWPCP were co-disposed with municipal solid waste at the Puente Hills Landfill.

FIGURE 2-11

CLEARWATER Program

Existing Biosolids Managment Locations

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

Table 2-6. Existing Biosolids Management Practices

Facility	Management Practice	Location	Distance From JWPCP (miles)	Quantity (wtpy)	Total (%)
San Joaquin Composting Facility	Composting	Kern County, CA	170	50,000–150,000	10–30
South Kern Industrial Center	Composting	Kern County, CA	131	50,000–75,000	10–15
Inland Empire Regional Composting Facility	Composting	Rancho Cucamonga, CA	59	50,000–75,000	10–15
Honey Bucket Farms	Land Application w/ Lime Stabilization	Kern County, CA	163	25,000–75,000	5–15
Desert Ridge Farms	Land Application	Yuma County, AZ	290	25,000–75,000	5–15
EnerTech	Renewable Fuel	Rialto, CA	75	25,000–75,000	5–15
Mitsubishi Cement Corp	Injection for NO_X Control	San Bernardino County, CA	129	5,000–15,000	1–5
Puente Hills Landfill	Landfill Co-disposal	Los Angeles County, CA	27	50,000–200,000	10–40

wtpy = wet tons per year

Although co-disposal is not considered a direct beneficial use, the inclusion of biosolids within a landfill can lead to increased gas production, which enhances energy recovery.

Biosolids Transport

Transportation of biosolids from the JWPCP to the various biosolids management facilities occurs by truck. A typical truck can carry approximately 25 wet tons of biosolids. Approximately 55 trucks leave the JWPCP each day carrying biosolids, with the peak trips occurring between 5:00 a.m. and 2:00 p.m. Approximately 20,000 trucks per year transport biosolids from the JWPCP to beneficial reuse and landfill locations.

JWPCP Effluent Management

After the wastewater undergoes primary, secondary, and disinfection treatment, the final step is to discharge the treated effluent into the ocean. The existing ocean discharge system has a permitted dry weather capacity of approximately 400 MGD and can handle wet weather flows up to approximately 675 MGD. The current JWPCP effluent management ocean discharge system, shown on Figure 2-2 and Figure 2-12, extends from the JWPCP to the Pacific Ocean and consists of two parallel tunnels (8 and 12 feet in internal diameter), four separate ocean outfalls (60, 72, 90, and 120 inches in internal diameter), and four sets of diffusers. The tunnels are interconnected at the manifold located at the Royal Palms Beach on the Palos Verdes Peninsula. At the deepest point, the tunnels are approximately 600 feet below ground surface. The tunnels generally extend from the west side of the JWPCP across Lomita Avenue (past the Wilmington Drain) and along Vermont Avenue and Western Avenue south to the Royal Palms Beach. The tunnels have not been inspected for over 50 years due to the constant flow of treated effluent through both tunnels.

The underground reinforced concrete manifold structure at the Royal Palms Beach connects the onshore tunnels to the offshore outfalls and diffusers. Currently, there are four offshore outfalls and diffusers. However, only the two larger and longer outfalls (90-inch diameter and 120-inch diameter) are used on a regular basis. All four offshore outfalls and diffusers have been ballasted with rock for wave action and surge protection. The existing ocean outfall system is further described in Table 2-7.

FIGURE 2-12

CLEARWATER Program

Existing Facilities at Royal Palms Beach

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, ESRI 2011, AirPhoto USA 2006

Table 2-7. Existing Ocean Discharge System

Segment	Year Placed in Operation	Operational Status	Length (feet)	Material	Diffuser Length (feet)	Discharge Depth (feet)
8-foot Tunnel	1937	Operational	32,340	Reinforced Concrete	NA	NA
12-foot Tunnel	1958	Operational	32,340	Reinforced Concrete	NA	NA
60-inch Outfall	1937	Standby, only used during peak storm flows	4,900	RCP w/ CI Joints	400	110
72-inch Outfall	1947	Standby, only used during peak storm flows	7,150	RCP w/ CI Joints	666	160
90-inch Outfall	1957	Operational	10,394	RCP w/ CI Joints	2,416	196–210
120-inch Outfall	1966	Operational	11,880	RCP	4,440	167–190

RCP = reinforced concrete pipe
CI = cast iron
NA = not applicable
Source: Parsons 2011

The pesticide, dichlorodiphenyltrichloroethane (DDT), was manufactured at the Montrose Chemical Corporation plant in Torrance, California, from 1947 through 1983. From 1947 to1971, DDT was disposed of into Sanitation Districts' sewers and conveyed to the JWPCP. Local industries also discharged polychlorinated biphenyls (PCBs) into the Sanitation Districts' sewer system until PCBs were banned in 1976. The JWPCP had no means of removing or containing the DDT or PCBs, which were discharged along with the plant's effluent into the Pacific Ocean approximately 1.5 miles off White Point on the Palos Verdes Shelf. Since the 1970s, the contaminated sediment has been gradually buried by plant effluent and natural sediment, resulting in a layer of cleaner sediment on top of the contaminated sediment. In 1997, the Sanitation Districts entered into a consent decree with the EPA to address DDT/PCB contamination on the Palos Verdes Shelf. The EPA has conducted various studies and investigations to determine the extent of the contaminated area and to evaluate the appropriate remediation measures. In June 2009, the EPA released for public comment their proposed plan to address risks to human health and the environment posed by the contaminated sediment. The proposed plan presented the EPA's preferred alternative, as well as the other alternatives the EPA evaluated to address these risks. On September 30, 2009, the EPA signed an interim record of decision that selected an initial remedial action for the Palos Verdes Shelf of capping, monitored natural recovery, and institutional controls. The cleanup decision will be documented in a record of decision, supported by the EPA's remedial investigation/feasibility study.

Chapter 3
ALTERNATIVES DESCRIPTION

3.1 Program and Project Analysis

Improvements throughout the Joint Outfall System (JOS) have been identified in the Clearwater Program Master Facilities Plan (MFP) and will be evaluated at either the program or project level in this environmental impact report/environmental impact statement (EIR/EIS). A program-level analysis generally evaluates the broad environmental effects of the program with the understanding that additional project-specific environmental review may be required for particular projects covered under the program. The project-specific environmental review would be performed at the time those projects are proposed for implementation and construction. A project-level analysis generally includes the necessary construction information and analyzes the specific environmental effects of the project elements.

As part of the planning process at the program level, the JOS was divided into five *program component areas*. Options within each program component area were formulated and evaluated as described in the following section. Options that passed a comprehensive and systematic screening process were carried forward for evaluation in this EIR/EIS. Four of the five program component areas were only evaluated at the program level. The fifth program component area was also evaluated at the more detailed project level because it would be implemented sooner and project-specific details were less speculative.

3.2 Alternatives Screening Process and Formulation

3.2.1 Alternatives Screening Process (Program)

Determination of the recommended plan required an evaluation of options within each program component area. The program component areas analyzed in the MFP are listed and described in Table 3-1. The program-level alternatives screening process is shown on Figure 3-1 and summarized in the paragraphs that follow. A detailed description of the project-level alternatives analysis process is provided in Chapter 6 of the MFP.

Table 3-1. Program Component Areas

Program Component Area	Description/Function
Wastewater Conveyance and Treatment	Evaluation of sewerage system and treatment plants in terms of capacity and facilities
Water Reclamation Plant (WRP) Effluent Management	Evaluation of effluent management options at the WRPs
Solids Processing	Evaluation of location and capacity of solids processing facilities
Biosolids Management	Evaluation of end uses for biosolids management
Joint Water Pollution Control Plant (JWPCP) Effluent Management	Evaluation of effluent management options at the JWPCP including capacity and aging infrastructure

JOINT OUTFALL SYSTEM – MAJOR PROGRAM COMPONENT AREAS				
CONVEYANCE/TREATMENT (CT)	SOLIDS PROCESSING (SP)	BIOSOLIDS MANAGEMENT (BM)	WRP EFFLUENT MANAGEMENT (WE)	JWPCP EFFLUENT MANAGEMENT (JE)
CONCEPTUAL OPTIONS – BY PROGRAM COMPONENT AREA				
1. JWPCP Expansion 2. WRP Expansion – Existing 3. WRP Expansion – New 4. WRP Expansion – Existing & New	1. Centralized Processing at JWPCP 2. Processing at Source Plants 3. Centralized Processing – New Site	1. Current Biosolids Management Practice – Beneficial Use/Landfill 2. Landfill Disposal – All Biosolids 3. Beneficial Use – All Biosolids	1. Current Effluent Management Systems – Reuse & Surface Discharge 2. All Reuse – No Surface Discharge 3. All Surface Discharge – No Reuse	1. Existing Ocean Discharge System 2. New Ocean Discharge System 3. Modified Ocean Discharge System 4. Reduced Ocean Discharge

LEVEL 1 SCREENING – PROGRAM OBJECTIVES

Provide adequate system capacity to meet the needs of the growing population

Provide for overall system reliability by allowing for the inspection, maintenance, repair, and replacement of aging infrastructure

Provide support for emerging recycled water reuse and biosolids beneficial use opportunities

Provide a long-term solution for meeting water quality requirements set forth by regulatory agencies

PRELIMINARY OPTIONS – BY PROGRAM COMPONENT AREA				
CT	SP	BM	WE	JE
CT 2A-F WRP Expansion – Existing	SP 1 Centralized Processing at JWPCP	BM 1 Current Biosolids Management Practice BM 3 Beneficial Use – All Biosolids	WE 1 Current Effluent Management Systems	JE 2 New Ocean Discharge System JE 3 Modified Ocean Discharge System JE 4 Reduced Ocean Discharge

LEVEL 2 SCREENING – PROGRAM COMPONENT AREAS SCREENING CRITERIA				
CT	SP	BM	WE	JE
Conveyance System Impacts Treatment Plant Impacts Regulatory Compliance Public Acceptability Operational Flexibility Cost Effectiveness	Treatment Plant Impacts Institutional Feasibility Regulatory Compliance Public Acceptability Operations Familiarity Cost Effectiveness	Maximize Resource Reuse Sustainability Regulatory Compliance Public Acceptability Operational Flexibility & Reliability Cost Effectiveness	Maximize Resource Reuse Sustainability Regulatory Compliance Public Acceptability Operations Familiarity Cost Effectiveness	Available Land/Right-of-Way Institutional Feasibility Regulatory Compliance Public Acceptability Operational Reliability Cost Effectiveness
VIABLE OPTIONS – BY PROGRAM COMPONENT AREA				
CT 2A-E WRP Expansion - Existing (SJCWRP)	SP 1A Continue Use of Existing Solids Processing Systems	BM 1 Current Biosolids Management Practice	WE 1 Current Effluent Management Systems	JE 2 New Ocean Discharge System JE 3 Modified Ocean Discharge System

VIABLE ALTERNATIVES (PROGRAM)

CT 2A : SP 1A : BM 1 : WE 1 : JE 2

CT 2A : SP 1A : BM 1 : WE 1 : JE 3

LEVEL 3 SCREENING – ALTERNATIVES EVALUATION CRITERIA

Project-Level Alternatives Analysis - see Figure 3-2 for detailed evaluation of JE component area

RANKED FEASIBLE ALTERNATIVES

HIGHEST RANKED	Alternative 4:	CE 2A : SP 1A : BM 1 : WE 1 : JE 3
↓	Alternative 1:	CE 2A : SP 1A : BM 1 : WE 1 : JE 2A
	Alternative 3:	CE 2A : SP 1A : BM 1 : WE 1 : JE 2B
LOWEST RANKED	Alternative 2:	CE 2A : SP 1A : BM 1 : WE 1 : JE 2C

ENVIRONMENTAL ANALYSIS (EIR/EIS) - See Figure 3-3

JOINT OUTFALL SYSTEM RECOMMENDED PLAN

FIGURE 3-1

CLEARWATER Program

Master Facilities Plan Program-Level Alternatives Screening Process

Source: Sanitation Districts of Los Angeles County 2011

On the basis of the identified needs within each program component area, *conceptual options* were developed. The conceptual options represent the range of practical options available to the Sanitation Districts of Los Angeles County (Sanitation Districts) for providing comprehensive wastewater management within the JOS.

The conceptual options were evaluated against the Level 1 screening criteria. The Level 1 screening criteria were derived from the Clearwater Program purpose and objectives identified in Chapter 1 of this EIR/EIS. Conceptual options were eliminated from further consideration if they did not meet the program objectives. Those not eliminated were carried forward and were designated as *preliminary options*.

A second level of screening was applied to the preliminary options. The options were rated based on identified program component area screening criteria. Program component area screening criteria included:

- Conveyance system impacts
- Regulatory compliance
- Public acceptability
- Treatment plant impacts
- Operational flexibility, reliability, and familiarity
- Resource reuse
- Sustainability
- Available/land right-of-way
- Institutional feasibility
- Cost-effectiveness

The preliminary options were evaluated by applying Level 2 screening criteria, and some were eliminated from further consideration. Those not eliminated were carried forward and designated as *viable options.* Three of the program component areas – water reclamation plant (WRP) effluent management, solids processing, and biosolids management – each resulted in one viable option. A fourth program component area, wastewater conveyance and treatment, resulted in multiple viable options. The fifth program component area, Joint Water Pollution Control Plant (JWPCP) effluent management, resulted in two viable options. The viable options were then subjected to Level 3 screening to establish the *feasible options*. Level 3 screening for the JWPCP effluent management program component area required a more detailed project-level analysis, which is described in Section 3.2.2.

Actions were identified for each component area to meet the needs of that component area. These actions are referred to as *program elements*. The program elements that compose the feasible options for each program component area are identified and described in Table 3-2.

Table 3-2. Program Elements by Program Component Area

Program Component Area	Program Element	Action Description/Function
Wastewater Conveyance and Treatment	Conveyance Improvements Plant Expansion Process Optimization	Provide conveyance system relief and improvements; Increase plant capacity at the SJCWRP; Optimize treatment processes at the SJCWRP, POWRP, LCWRP, and LBWRP
WRP Effluent Management	WRP Effluent Management	Continue practice of reuse and discharge at the WRPs
Solids Processing	Solids Processing	Centralize solids processing at the JWPCP
Biosolids Management	Biosolids Management	Continue management of biosolids to diversified markets
JWPCP Effluent Management (to be further evaluated at the project level)	JWPCP Effluent Management	Provide a reliable ocean discharge system, including rehabilitation of the existing ocean outfalls

3.2.2 Alternatives Screening Process (Project)

From the program-level analysis, two JWPCP effluent management options were considered viable: a new ocean discharge system and a modified ocean discharge system. Determination of the feasibility and ranking of these options required a systematic screening and assessment process. Both the new and modified ocean discharge systems were divided into five *project elements* in the MFP. The project elements analyzed in the MFP are listed and described in Table 3-3. Viable options from each project element were combined to form a set of viable ocean discharge system project alternatives. These viable project alternatives were further screened and ranked. The process is shown on Figure 3-2 and summarized in the paragraphs that follow. A detailed description of the project-level alternatives screening process for JWPCP effluent management is provided in Chapter 6 of the MFP.

Table 3-3. Ocean Discharge System Project Elements

Project Elements	Description/Function
Onshore Tunnel Alignment	A tunnel from the JWPCP shaft site to an intermediate shaft site
Offshore Tunnel Alignment	A tunnel from an intermediate shaft site to the offshore riser and diffuser area
JWPCP Shaft Site	A shaft located on JWPCP property temporarily used for construction of a tunnel and permanently used for the conveyance of effluent to the onshore tunnel
Intermediate Shaft Site	A shaft located between the JWPCP and the coast temporarily used for construction of a tunnel and/or a valve structure and permanently used for access
Diffuser Area	A riser connects the offshore tunnel to the diffuser; a diffuser located on the seafloor disperses effluent into the ocean

Initial criteria were used to define a study area for the ocean discharge system. The Level 1 screening criteria (e.g., having a minimum of 2 to 4 acres, using public lands, and avoiding utilities) were established for each of the project elements to develop a set of *preliminary options*. The preliminary options were intended to represent the range of practical options available to the Sanitation Districts.

The preliminary options were then evaluated against the Level 2 screening criteria. The Level 2 screening criteria considered technical and environmental constraints, as well as public input to identify proposed locations for project elements. Those not eliminated during the screening process were carried forward and designated as *viable options*.

Viable options from each project element were combined to form *viable alternatives* for the project. These alternatives were subjected to the Level 3 screening criteria, which included:

- Public input
- Cost-effectiveness
- Long-term uncertainty
- Operational considerations
- Constructability
- Environmental impacts

Each element of the viable project alternatives was scored on a scale of 0 to 10 for each of the Level 3 screening criteria. Multi-criteria decision-support software was used to evaluate the scores for each project alternative and to establish four *ranked feasible alternatives* for the project.

STUDY AREA CRITERIA

Use a direct route from JWPCP to diffuser | Remain on continental shelf | Maintain appropriate distance from other outfalls | Avoid Marine Protected Areas

LEVEL 1 SCREENING – PROJECT OBJECTIVES

JWPCP SHAFT SITES	ONSHORE ALIGNMENT	INTERMEDIATE SHAFT SITES	OFFSHORE ALIGNMENT	RISER & DIFFUSER AREA
Minimum area – 8 acres Mostly within JWPCP boundaries Sufficient access Appropriate shape/geometry Avoid existing facilities	Use public ROW and easements Sufficient turning radius for tunnel boring machine Minimize overall length	Sufficient area Appropriate shape/geometry Relatively flat Use public lands Proximity to onshore alignment	Input from viable land and diffuser options All tunnel (T) Combined tunnel & ocean floor pipeline (C)	Perform as well as existing outfalls Slope (straight contour) Geotechnically stable area Avoid other agency outfalls

PRELIMINARY OPTIONS – BY PROJECT ELEMENT

JWPCP West JWPCP East	Fig-NGaf-SGaf Fig-NGaf-Pac Fig-NGaf-Pac-CBch Fig-NGaf-Harb Fig-Nav-West Fig-NGaf-Cap-West Fig-JSG-SGaf Fig-JSG-Pac	Fig-JSG-Pac-CBch Fig-JSG-Harb Fig-JSG-Cap-West Fig-CS-Harb Frig-JSG-SGaf Frig-JSG-Pac Frig-JSG-Pac-CBch Frig-JSG-Cap-West	Frig-JSG-Harb Frig-CS-Harb Fig-POLA Frig-POLA Wilm-POLA Lom-West	Navy Fuel Depot Fort MacArthur Averill Park Cabrillo Beach Field of Dreams Peck Park	Point Fermin Park White Pt Nature Reserve Royal Palms Beach Angels Gate Park Port of Los Angeles	AG-PV(T) AG-SP(T) AG-PV(C) AG-SP(C) LAXT-SWM-PV(T) LAXT-SWM-SP(T)	LAXT-SWM-PV(C) LAXT-SWM-SP(C) LAXT-P400-PV(T) LAXT-P400-SP(T) LAXT-P400-PV(C) LAXT-P400-SP(C)	Palos Verdes Shelf San Pedro Shelf at Sea Valley San Pedro Shelf Existing ocean outfalls

LEVEL 2 SCREENING – PROJECT ELEMENT SCREENING CRITERIA

JWPCP SHAFT SITES	ONSHORE ALIGNMENT	INTERMEDIATE SHAFT SITES	OFFSHORE ALIGNMENT	RISER & DIFFUSER AREA
Compatible land use Minimize environmental concerns Minimize impact to public facilities Institutional constraints relative to use	Minimize exposure to faults Compatible with intermediate shaft sites Minimize easement required Minimize length	Compatible land use Minimize environmental concerns Minimize impact to recreational areas Avoid contaminated sites Input from local jurisdictions and public	Stay within state-of-art tunnel/riser limits Minimize cost Minimize marine impacts Avoid offshore crossing of PV Fault	Favorable currents Ability to accommodate future flows

VIABLE OPTIONS – BY PROJECT ELEMENT

JWPCP West JWPCP East	Fig-NGaf-SGaf Fig-Nav-West Fig-NGaf-Cap-West Fig-JSG-Cap-West	Fig-JSG-SGaf Wilm-POLA Lom-West Frig-POLA	Angels Gate Park Port of Los Angeles Royal Palms Beach	AG-PV(T) LAXT-SWM-PV(T) LAXT-SWM-SP(T)	Palos Verdes Shelf San Pedro Shelf Existing ocean outfalls

AG: Angels Gate
Cap: Capitol Dr
CBch: Cabrillo Beach
CS: China Shipping
Fig: Figueroa St
Frig: Frigate Ave
Harb: Harbor Blvd
JSG: John S Gibson Blvd
LAXT: Los Angeles Export Terminal
Lom: Lomita Blvd
NAV: Naval Fuel Depot
NGaf: North Gaffey St
Pac: Pacific Ave
P400: Pier 400
POLA: Port of Los Angeles
PV: Palos Verdes Shelf
RP: Royal Palms
SGaf: South Gaffey St
SP: San Pedro Shelf
SWM: Southwest Marine
West: Western Ave
Wilm: Wilmington Blvd

VIABLE ALTERNATIVES (PROJECT)

JWPCP West : Fig-JSG-SGaf : AG : AG-PV(T) : PV
JWPCP West : Fig-NGaf-SGaf : AG : AG-PV(T) : PV
JWPCP East : Wilm-POLA : POLA : LAXT-SWM-PV(T) : PV
JWPCP East : Wilm-POLA : POLA : LAXT-SWM-SP(T) : SP
JWPCP East : Frig-POLA : POLA : LAXT-SWM-SP(T) : SP
JWPCP East : Frig-POLA : POLA : LAXT-SWM-PV(T) : PV
JWPCP West : Fig-Nav-West : RP : Existing ocean outfalls
JWPCP West : Fig-NGaf-Cap-West : RP : Existing ocean outfalls
JWPCP West : Fig-JSG-Cap-West : RP : Existing ocean outfalls
JWPCP West : Lom-West : RP : Existing ocean outfalls

LEVEL 3 SCREENING – ALTERNATIVES EVALUATION CRITERIA (PROJECT)

Public input | Cost effectiveness | Long-term uncertainty | Operational considerations | Constructability | Environmental impacts

RANKED FEASIBLE ALTERNATIVES (PROJECT)

HIGHEST RANKED	Alternative 4 (JE 3):	JWPCP West : Fig-NGaf-Cap-West : RP : Existing ocean outfalls
	Alternative 1 (JE 2A):	JWPCP East : Wilm-POLA : POLA : LAXT-SWM-SP(T) : SP
	Alternative 3 (JE 2B):	JWPCP West : Fig-JSG-SGaf : AG : AG-PV(T) : PV
LOWEST RANKED	Alternative 2 (JE 2C):	JWPCP East : Wilm-POLA : POLA : LAXT-SWM-PV(T) : PV

ENVIRONMENTAL ANALYSIS (EIR/EIS) - See Figure 3-3

RECOMMENDED PROJECT

FIGURE 3-2

CLEARWATER Program

Master Facilities Plan Project-Level Alternatives Screening Process

Source: Sanitation Districts of Los Angeles County 2011

3.2.3 Recommended Plan

As discussed previously, screening at the program level identified one feasible option for four of the five program component areas (wastewater conveyance and treatment, WRP effluent management, solids processing, and biosolids management). These feasible options were combined to form four feasible alternatives (program). Analysis of the fifth program component area (JWPCP effluent management) resulted in four ranked feasible project alternatives for the ocean discharge system. The four feasible program alternatives were paired with each of the four ranked feasible project alternatives to produce four *ranked feasible alternatives* for the Clearwater Program. The highest ranked of these alternatives was selected as the *recommended plan* in the MFP and identified as the *recommended alternative* in the EIR/EIS.

3.2.4 EIR/EIS Alternatives Formulation

The ranked feasible alternatives developed in the MFP are analyzed in this EIR/EIS. The relationship between the four EIR/EIS alternatives and the MFP alternatives is depicted on Figure 3-3. The relationship between the component areas and the project elements is also shown on Figure 3-3. In addition, a no-project alternative, as required by the California Environmental Quality Act (CEQA), and a no-federal-action alternative, as required by National Environmental Policy Act (NEPA), will be evaluated in this document.

3.3 Description of Alternatives

3.3.1 Description of Alternatives (Program)

The program elements that compose the alternatives (program) have been organized by facility/location for analysis in this EIR/EIS as shown in Table 3-4. It should be noted that all of the program elements are the same for Alternatives 1 through 4 (Program). The program elements for each facility/location are described in detail in the following sections.

Table 3-4. Program Elements by Alternative (Program) and Location/Facility

Alternative (Program)	Conveyance System	SJCWRP	POWRP	LCWRP	LBWRP	WNWRP	JWPCP
1	Conveyance Improvements	Plant Expansion	Process Optimization	Process Optimization	Process Optimization	Process Optimization	Solids Processing
		Process Optimization	WRP Effluent Management	WRP Effluent Management	WRP Effluent Management	WRP Effluent Management	Biosolids Management
		WRP Effluent Management					JWPCP Effluent Management
2	Same as Alternative 1						
3	Same as Alternative 1						
4	Same as Alternative 1						
5	No Project - See Section 3.4.1.5						
6	No Federal Action - See Section 3.4.1.6						

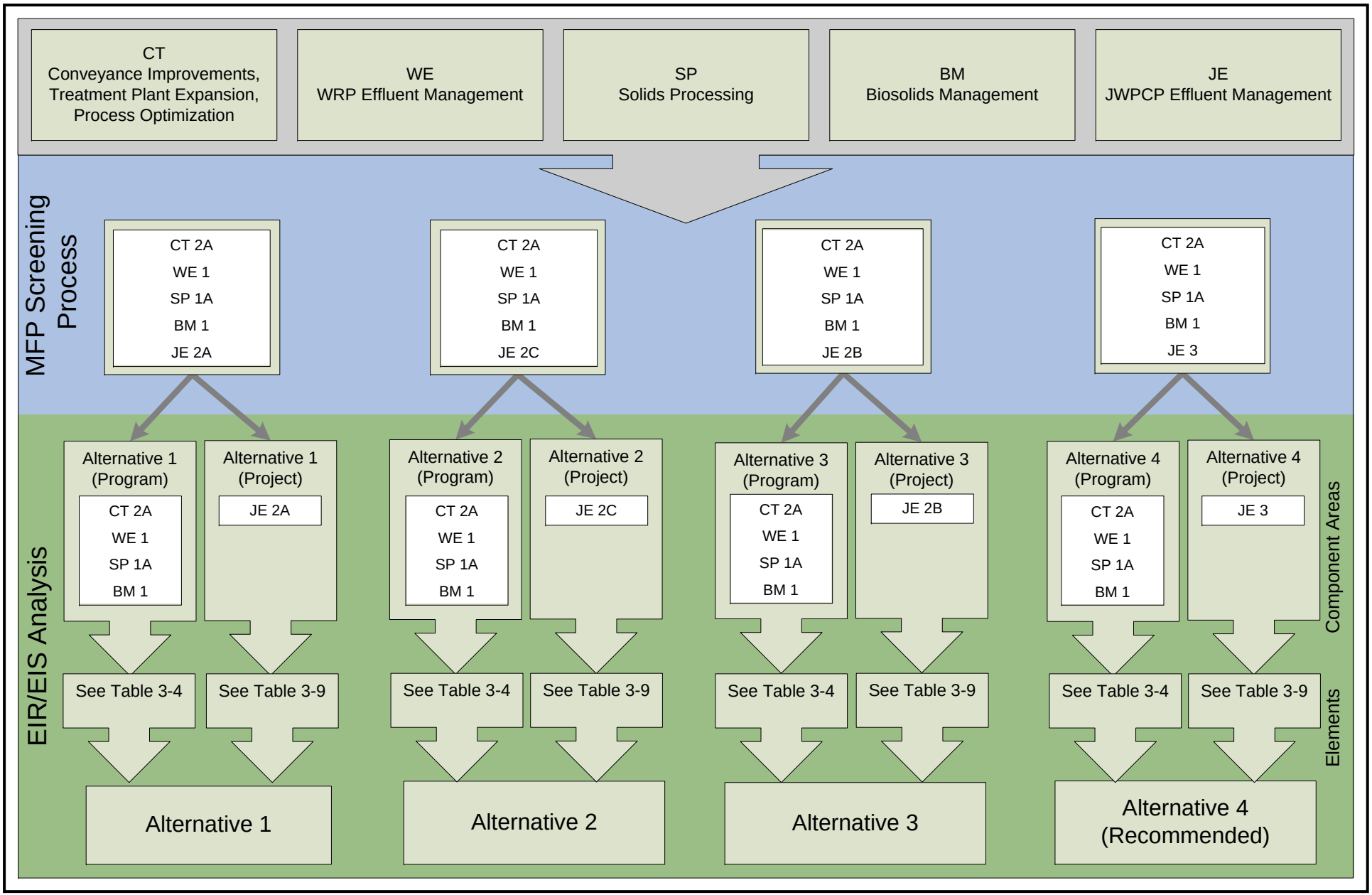


FIGURE 3-3

Relationship Between Master Facilities Plan and EIR/EIS Alternatives

Source: Sanitation Districts of Los Angeles County 2011

3.3.1.1 Conveyance System

The Sanitation Districts own, operate, and maintain an interconnected network of trunk sewers that convey wastewater to JOS treatment facilities. The projected year 2050 flows within the JOS were evaluated in the MFP through a conveyance system assessment to determine the total length of sewers requiring relief based on the upstream plant expansion described in Section 3.3.1.2. The Sanitation Districts intend to implement conveyance system relief projects on an as-needed basis. Approximately 33 miles of joint outfall (JO) sewer lines would require some type of relief (i.e., replacement of current pipes with larger diameter pipes or addition of parallel pipes). The required conveyance system improvements are identified in Table 3-5 by JO trunk sewers and graphically depicted on Figure 3-4.

Table 3-5. Conveyance System Improvements

Joint Outfall (JO) Trunk Sewers	Total Length of Sewers Requiring Relief (miles)
JO A	10.3
JO B	11.6
JO C	0.4
JO D	1.0
JO E	1.3
JO F	2.6
JO G	0.9
JO H	4.3
JO J	0.1
Total	32.5

3.3.1.2 Water Reclamation Plants

In the MFP, all of the WRPs and the JWPCP were evaluated and analyzed to meet the projected JOS treatment capacity shortfall of approximately 20 million gallons per day (MGD). It was determined that a combination of (1) expansion at the San Jose Creek Water Reclamation Plant (SJCWRP) and (2) process optimization at the SJCWRP[1], Pomona Water Reclamation Plant (POWRP), Los Coyotes Water Reclamation Plant (LCWRP), and Long Beach Water Reclamation Plant (LBWRP) could be implemented to meet the capacity needs of the system and to maximize water reuse opportunities. Capacity expansion consists of the construction of additional treatment facilities within the existing plant boundary to allow for increasing flow at the plant. Process optimization consists of modifications within the existing plant to ensure that the Sanitation Districts continue to consistently meet permit conditions in anticipation of increasing regulatory requirements. Process optimization construction activities include flow equalization through the addition of below-ground storage capacity; treatment system modifications, as well as ancillary support facilities; and other in-plant upgrades.

Only one option for the WRP effluent management program component area passed the screening process. This option involves the continuation of the existing practice of beneficial reuse and surface water discharge as described in Section 2.2.4.2. No major changes to either the discharge locations or protocols employed are proposed as a part of the Clearwater Program.

[1] With respect to this EIR/EIS, process optimization at the SJCWRP only includes facilities associated with SJCWRP West. Process optimization at the SJCWRP East is an existing project with its own environmental coverage and, therefore, is beyond the scope of this document.

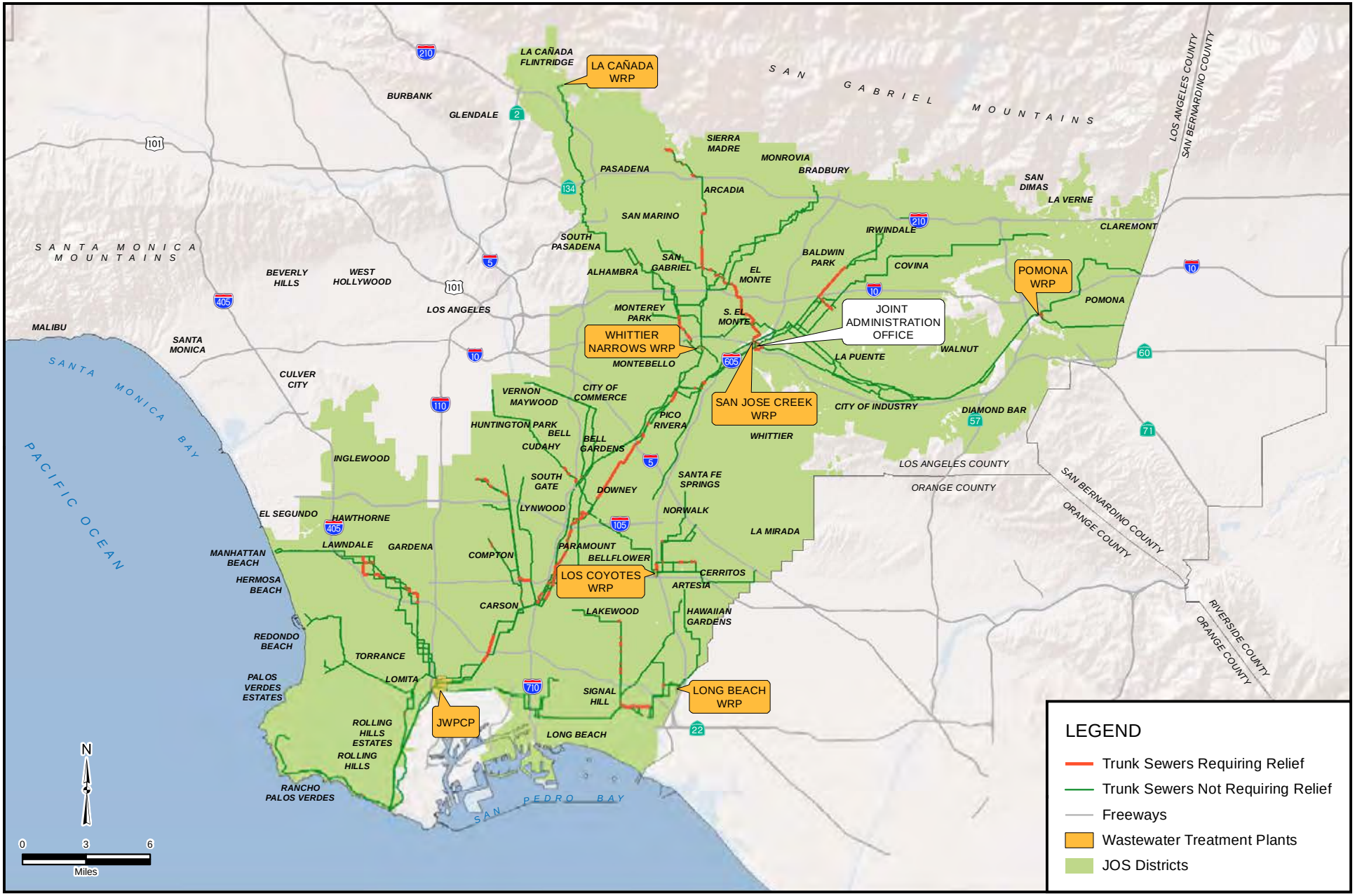


FIGURE 3-4

CLEARWATER Program

Conveyance System Improvements

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

San Jose Creek Water Reclamation Plant

The SJCWRP would be expanded by two treatment modules for a total of 25 MGD, resulting in a total treatment capacity of 125 MGD. The new treatment and process optimization facilities would be generally located as shown on Figure 3-5. Based on the flow projections, plant expansion would likely be implemented between 2040 and 2050, with a construction duration of 2 to 3 years. Process optimization would likely be implemented between 2018 and 2028, depending on future flows, recycled water demands, regulatory requirements, and funding considerations. The construction time for the process optimization facilities would be about 2 to 3 years.

It is estimated that an annual average of approximately 24 MGD of recycled water would be beneficially reused for groundwater replenishment, with a month-to-month range of 10 to 50 MGD, and 52 to 101 MGD would be distributed for other reuses. This would result in no change in groundwater replenishment and a possible 45 to 94 MGD increase in other reuses by the end of the 2050 planning horizon. This would also result in annual discharges to lined surface waters of approximately 0 to 49 MGD, which would be a potential increase of 8 MGD or decrease of 69 MGD.

Pomona Water Reclamation Plant

At the POWRP, process optimization facilities would be generally located as shown on Figure 3-6. Process optimization would likely be implemented between 2018 and 2028, depending on future flows, recycled water demands, regulatory requirements, and funding considerations. The construction time for the process optimization facilities would be about 1 to 2 years.

It is estimated that an annual average of approximately 5 to 6 MGD of recycled water would be beneficially reused for groundwater replenishment, with a month-to-month range of 5 to 6 MGD, and 9 to 11 MGD would be distributed for other reuses. This would result in a possible 1 to 2 MGD increase in groundwater replenishment and a possible 5 to 7 MGD annual increase in other reuses by the end of the 2050 planning horizon.

Los Coyotes Water Reclamation Plant

At the LCWRP, process optimization facilities would be generally located as shown on Figure 3-7. Process optimization would likely be implemented between 2018 and 2028, depending on future flows, recycled water demands, regulatory requirements, and funding considerations. The construction time for the process optimization facilities would be about 1 to 2 years.

Groundwater replenishment does not take place at this site. It is estimated that an annual average of approximately 6 to 25 MGD of recycled water would be distributed for other reuses, resulting in a possible 3 to 22 MGD increase in other reuses by the end of the 2050 planning horizon. This would also result in discharges to lined surface waters of approximately 12 to 31 MGD, which would be similar to the current range of discharges.

Long Beach Water Reclamation Plant

At the LBWRP, process optimization facilities would be generally located as shown on Figure 3-8. Process optimization would likely be implemented between 2018 and 2028, depending on future flows, recycled water demands, regulatory requirements, and funding considerations. The construction time for the process optimization facilities would be about 1 to 2 years.

Groundwater replenishment does not take place at this site. It is estimated that an annual average of approximately 11 to 16 MGD of recycled water would be distributed for other reuses, resulting in a possible 4 to 10 MGD increase in other reuses by the end of the 2050 planning horizon. This would also

FIGURE 3-5

CLEARWATER Program

San Jose Creek Water Reclamation Plant
Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 3-6

CLEARWATER Program

Pomona Water Reclamation Plant Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

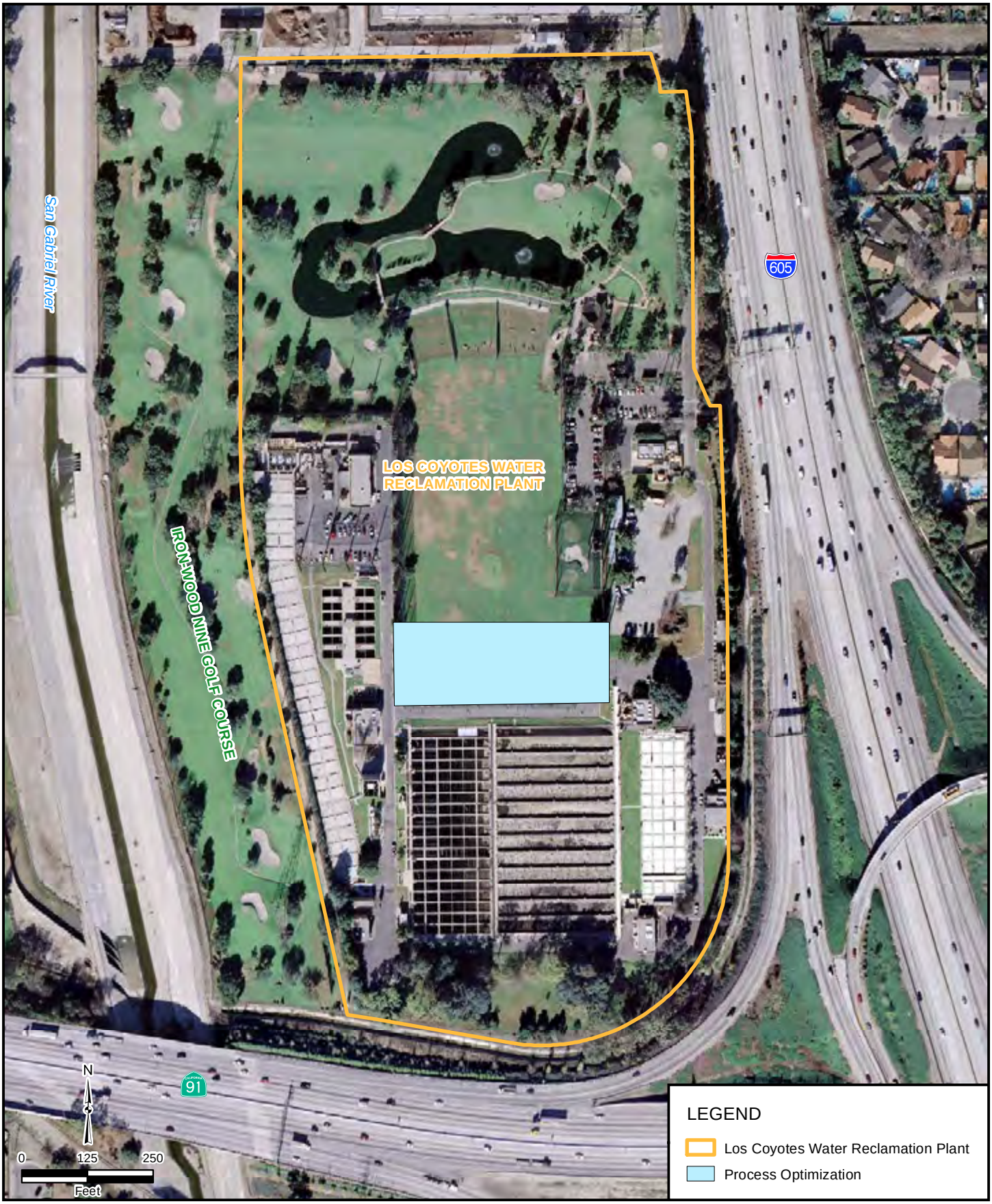


FIGURE 3-7

CLEARWATER Program

Los Coyotes Water Reclamation Plant Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

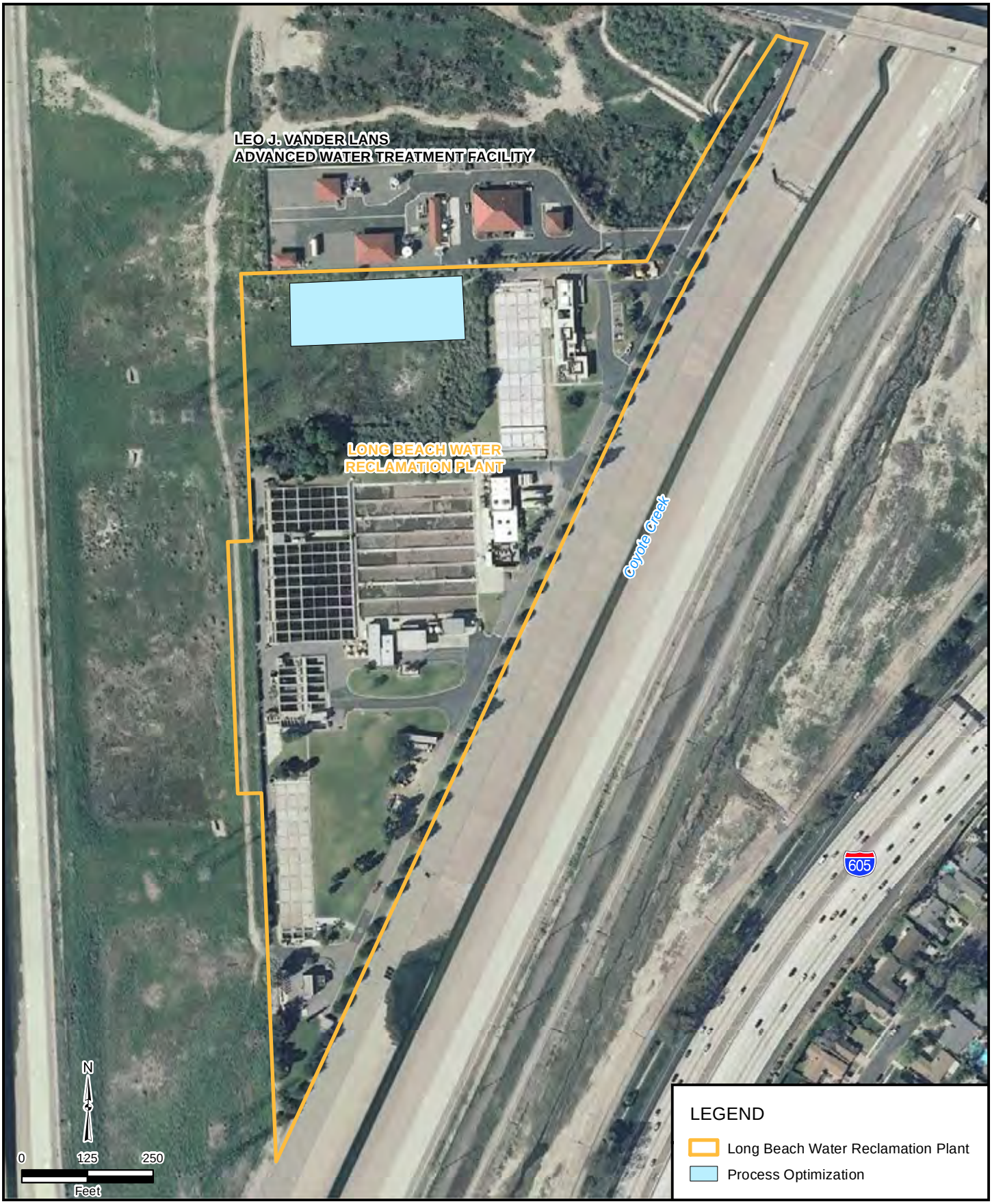


FIGURE 3-8

CLEARWATER Program

Long Beach Water Reclamation Plant Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011

result in a discharge to lined surface waters of approximately 9 to 14 MGD, which would be similar to the current range of discharges.

Whittier Narrows Water Reclamation Plant

At the WNWRP, it is estimated that an annual average of approximately 9 MGD of recycled water would be beneficially reused as groundwater replenishment, and 5 MGD would be distributed for other reuses, resulting in a possible 4 MGD increase in recharge and/or a possible 4 MGD increase in other reuses by the end of the 2050 planning horizon.

3.3.1.3 Joint Water Pollution Control Plant

Through the MFP screening process, it was determined that the JWPCP would not be expanded beyond the existing permitted treatment capacity of 400 MGD. However, the additional flows to the entire JOS would result in increased production of solids that would be processed into biosolids at the JWPCP. Effluent management at the JWPCP was also analyzed in the MFP. Recommendations for solids processing, biosolids management, and effluent management at the JWPCP are described herein.

Solids Processing

Centralized solids processing at the JWPCP would continue in accordance with the existing practices, as described in Section 2.2.4.3. Any new JOS solids processing facilities would be constructed at the JWPCP. This approach provides continuity with existing practices and avoids major expenses for new systems and/or property acquisition. Projections for future solids generated at the JWPCP were based on current per capita generation rates and the projected JOD population for 2050, resulting in the proposed future solids processing facility requirements as summarized in Table 3-6.

Table 3-6. Future Solids Processing Facilities Requirements (2050)

	Sludge Thickening	Sludge Stabilization	Sludge Dewatering
Current Capacity, MGD	11	5	6
Projected Treatment Needs, MGD	8	6	6
Projected Capacity Increase, MGD	0	1	0
Additional Units Required	0	6	0

Sludge Thickening

As shown in Table 3-6, the capacity of the existing sludge thickening facilities at the JWPCP is anticipated to be sufficient to meet the projected needs for 2050. Therefore, no additional sludge thickening systems would be required over the duration of the planning period.

Sludge Stabilization

Sludge stabilization is achieved at the JWPCP through the use of anaerobic digesters. Based on the projected sludge flows, it is estimated that six additional anaerobic digesters would be required by approximately 2040. The proposed digesters would be similar to the existing units, each with a volume of approximately 500,000 cubic feet. The timing for construction of the proposed digesters is dependent upon the future trending of sludge production at the JWPCP. Any indication of increased solids loadings would precipitate implementation of additional digester capacity. The location for the new digesters would be within the JWPCP site as shown on Figure 3-9.

Sludge Dewatering

The capacity of the existing sludge dewatering system is anticipated to be sufficient to meet the projected future digested sludge flow for 2050. Therefore, no additional sludge dewatering facilities would be

FIGURE 3-9

CLEARWATER Program

Joint Water Pollution Control Plant Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

required over the duration of the planning period. The Sanitation Districts will continue the existing program of replacing aging centrifuges as needed throughout the duration of the planning period.

Digester Gas Handling and Power Generation

The power plant at the JWPCP currently utilizes two turbines that run on digester gas, a third turbine that is used for standby, four boilers that create steam from digester gas for process heating, and twelve flares that burn excess digester gas. Additional gas resulting from an increased number of digesters will be managed by these facilities. The turbines are currently supplemented with natural gas. As digester gas increases, it will be used in lieu of natural gas.

Biosolids Management

As described in the MFP, the Sanitation Districts propose to continue to utilize beneficial use alternatives that provide enhancement to the environment, are a reliable means for ultimate biosolids disposal, are cost-effective, and comply with all regulatory requirements. The Sanitation Districts will also continue to use existing landfills for co-disposal of biosolids.

The wet weight of Sanitation Districts' biosolids generated is anticipated to increase by approximately 30 percent by 2050. This increase is attributable to several factors including, but not limited to, the population increase within the Sanitation Districts' service area; increased JOS flows; changes in wastewater influent quality; and upgrades, optimization, and new technology at the JWPCP.

Beneficial Use

Although the Sanitation Districts intend to continue to use some of the existing locations described in Chapter 2 for beneficial use, the long-range plans for biosolids management also include operation of a composting facility in Kings County, California, called the Westlake Farms Composting Facility. In 2001, the Sanitation Districts purchased 14,500 acres of land and entitlements to construct a co-composting facility that could process up to 500,000 wet tons per year (wtpy) of biosolids. The Westlake Farms Composting Facility would compost the Sanitation Districts' biosolids, green waste from Central Valley and Southern California communities, and agricultural wastes from the Central Valley using a covered aerated static pile composting technology. The compost product will be used on adjacent agricultural land. Agricultural wastes have specifically been included as feedstock to improve air quality by providing an outlet for material that otherwise would likely be burned openly in the field. Biofilter technology would be used to control odors and air emissions from the facility, along with state-of-the-art covers designed specifically for odor control from aerated static piles. The environmental impact report (EIR) for the Westlake Farms Composing Facility was completed in 2003 and certified in 2004. The facility is being constructed in phases, and the initial phase, scheduled to begin operations in 2013, will allow for up to 100,000 wtpy of biosolids.

Biosolids Management Locations

Approximately 1,850 wet tons per day of biosolids are anticipated to be generated in 2050. Biosolids are currently transported to biosolids management facilities by truck, but may be hauled by rail or other modes of transportation in the future. A typical truck can carry approximately 25 wet tons of biosolids. Approximately 75 trucks would leave the JWPCP each day carrying biosolids, with the peak trips occurring between the hours of 5:00 a.m. and 2:00 p.m. Approximately 27,500 trucks a year would transport biosolids from the JWPCP to the beneficial use and landfill locations. Currently, there are no plans to transport biosolids via rail.

Anticipated future biosolids management locations are identified in Table 3-7. The locations for these facilities are shown on Figure 3-10. It should also be noted that operations at Puente Hills Landfill, which is an existing landfill co-disposal location, are expected to terminate October 31, 2013.

FIGURE 3-10

CLEARWATER Program

Anticipated Future Biosolids Managment Locations

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

Table 3-7. Future Biosolids Management Locations

Facility	Management Practice	Status	Location	Distance From JWPCP (miles)	Quantity (wtpy)	Total (%)
Westlake Farms	Composting	2013 (Expected)	Kings County, CA	200	100,000–500,000	14–72
EnerTech Environmental SlurryCarb Facility	Renewable Fuel	Operating	Rialto, CA	75	50,000–150,000	7–22
South Kern Industrial Center	Composting	Operating	Kern County, CA	131	50,000–150,000	7–22
Inland Empire Regional Composting Facility	Composting	Operating	Rancho Cucamonga, CA	59	50,000–150,000	7–22
San Joaquin Composting Facility	Composting	Operating	Kern County, CA	170	0–150,000	0–22
Arizona Land Application	Land Application	Operating	Various Counties in AZ	300	0–150,000	0–22
Honey Bucket Farms	Land Application	Operating	Kern County, CA	160	0–150,000	0–22
Mitsubishi Cement Corp	Injection for NO_X Control	Operating	San Bernardino County, CA	129	0–100,000	0–14

wtpy = wet tons per year
NO_X = nitrogen oxide

Other Future Beneficial Use Opportunities

The Sanitation Districts will continue to receive and analyze proposals from contractors to manage biosolids and may enter into agreements for use of sites and technologies that will maintain a diversified portfolio of options. The Sanitation Districts would only consider proposals from contractors that have obtained, or will have obtained prior to startup, all required local, state, and federal permits and have complied with CEQA, NEPA, and/or all other applicable environmental requirements.

The Sanitation Districts may develop additional facilities to serve these same purposes, either individually or in partnership with the public and/or private sector. The Sanitation Districts may own or jointly own any such facilities, and may also directly operate or contract for the operation of any such facilities. A list of other potential landfill and composting facilities that accept wastewater biosolids located within a 100-mile radius of the JWPCP are listed in Table 5-9 of the MFP.

Future management of the Sanitation Districts' biosolids may incorporate a variety of operations, sites, and technologies including, but not limited to:

- Direct land application of Class B or Class A biosolids, either by surface application or subsurface injection
- Monofill and bioreactor technology
- Deep well injection
- Incineration, pyrolysis, gasification, vitrification, or other appropriate technologies
- Reuse of any biosolid-derived products, including, but not limited to, construction materials, glassified products, aggregate, or any other value-based material
- Reclamation uses approved by federal regulations, including, but not limited to, mine reclamation and reclamation of fire-ravaged lands
- Disposal and co-disposal at municipal solid waste landfills

The Sanitation Districts' biosolids may also be processed with other materials in various applications, including, but not limited to:

- Municipal solid waste
- Urban and rural green waste
- Various forms of agricultural waste
- Soil
- Manure and/or animal waste
- Food residuals

Future biosolids processing and/or end-product use locations may include:

- All counties in the state of California
- The state of Arizona
- Other U.S. states and territories, if applicable
- Foreign countries that desire biosolids, or biosolids-derived products, for reuse and/or processing

While biosolids could go to any of these locations, this EIR/EIS analyzes the facilities currently receiving, and the facilities most likely to receive, biosolids listed in Table 2-5 and Table 3-7. This document does not analyze more speculative locations, such as foreign countries or states other than California and Arizona.

JWPCP Effluent Management

The construction of a new or modified ocean discharge system for the JWPCP effluent management program component area was proposed in the MFP. The system would have the capacity to accommodate all current and projected future flows to the JWPCP through the year 2050. In addition to a new or modified ocean discharge system, the MFP recommended rehabilitation of the existing ocean outfalls. If a new system is constructed, the existing system would typically function as back up and would only be used when the new system is not in use (e.g., during maintenance and repair). Overall, this approach provides reliability and redundancy to a critical component of the JOS. The JWPCP effluent management program component area results in a project that is described in greater detail in Section 3.3.2.

3.3.1.4 Alternatives (Program) Summary

As recommended in the MFP, the program elements to undergo program-level analysis in this EIR/EIS include conveyance improvements to the conveyance system; plant expansion at the SJCWRP; process optimization at the SJCWRP, POWRP, LBWRP, and LCWRP; WRP effluent management; solids processing at the JWPCP; and biosolids management at the JWPCP. JWPCP effluent management, including rehabilitation of the existing ocean outfalls, will be evaluated at the project level in the following section. A summary of the proposed changes for the program-level elements for each alternative is shown in Table 3-8.

Table 3-8. Program-Level Elements

	Proposed Changes						
Alternative	**Conveyance Improvements**	**Plant Expansion**	**Process Optimization**	**WRP Effluent Management**	**Solids Processing**	**Biosolids Management**	**JWPCP Effluent Management**
1	33 miles of sewers	25 MGD expansion of SJCWRP	Process optimization at SJCWRP, POWRP, LCWRP, and LBWRP	Increase reuse at all WRPs	Six new digesters at JWPCP	Increase of 20 truck trips	One new or modified ocean discharge system and rehabilitation of existing ocean outfalls
2	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
3	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
4	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
5 (No Project) [a]	Same as Alternative 1	Same as Alternative 1	None	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	None
6 (No Federal Action) [b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[a] See Section 3.4.1.5.
[b] See Section 3.4.1.6.
MGD = million gallons per day
N/A = not applicable

3.3.2 Description of Alternatives (Project)

The project elements for the JWPCP effluent management program component area that compose the set of alternatives (project) have been grouped for analysis in this EIR/EIS into three functional categories: (1) tunnel alignment (onshore and offshore), (2) shaft site (JWPCP and intermediate), and (3) riser and diffuser area.

The JWPCP effluent management program component area relies on an ocean discharge system. The ocean discharge system would be constructed from the JWPCP to the San Pedro Shelf (SP Shelf) or to the Palos Verdes Shelf (PV Shelf) in the Pacific Ocean or to the existing ocean outfall manifold structure located at the Royal Palms Beach near White Point as depicted on Figure 3-11. The project elements analyzed in this EIR/EIS for the JWPCP ocean discharge system alternatives (project) are shown in Table 3-9, organized by functional category. It should also be noted that each alternative (project) would include rehabilitation of the existing ocean outfalls (as listed in Table 3-9 under the functional category, riser/diffuser area). The rehabilitation construction work is further described in Section 3.3.2.3. Alternatives 1 through 4 (Project) are individually shown on Figure 3-12, Figure 3-13, Figure 3-14, and Figure 3-15 respectively. Project-level construction for the ocean discharge system could be initiated as early as 2015 and continue through approximately 2022.

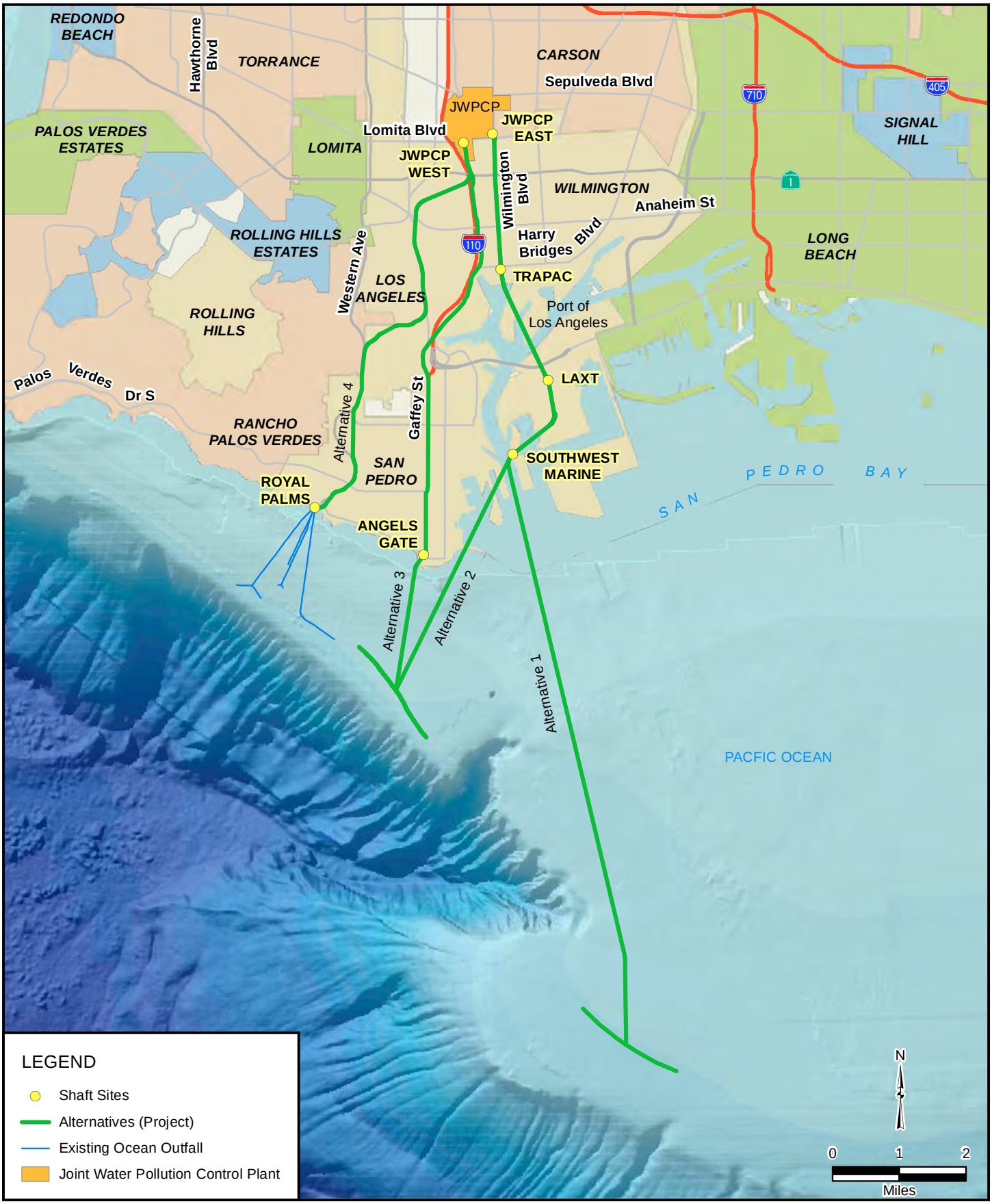


FIGURE 3-11

CLEARWATER Program

Ocean Discharge System Alternatives (Project)

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011

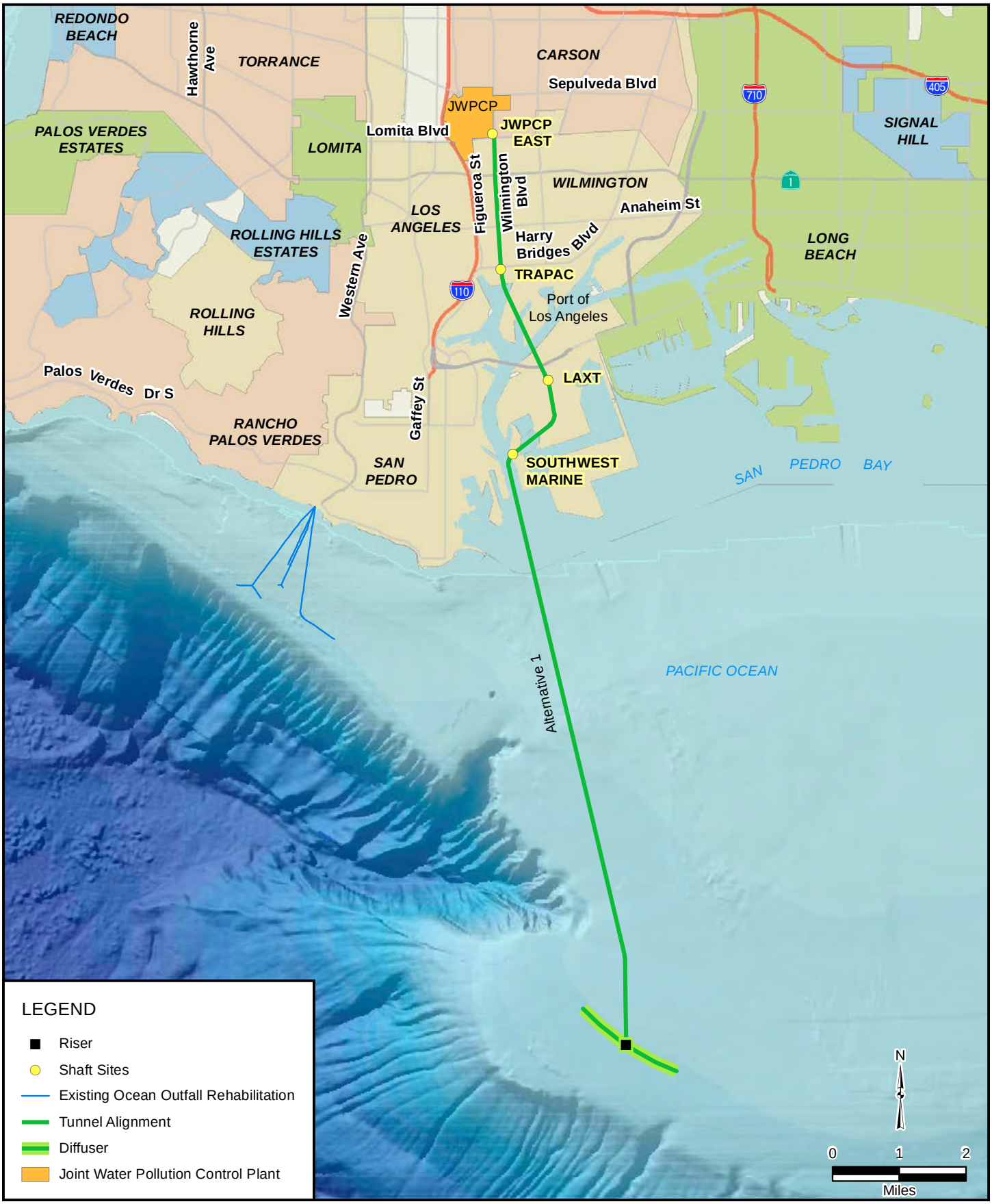


FIGURE 3-12

CLEARWATER Program

Ocean Discharge System Alternative 1 (Project)

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011

FIGURE 3-13

CLEARWATER Program

Ocean Discharge System Alternative 2 (Project)

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011

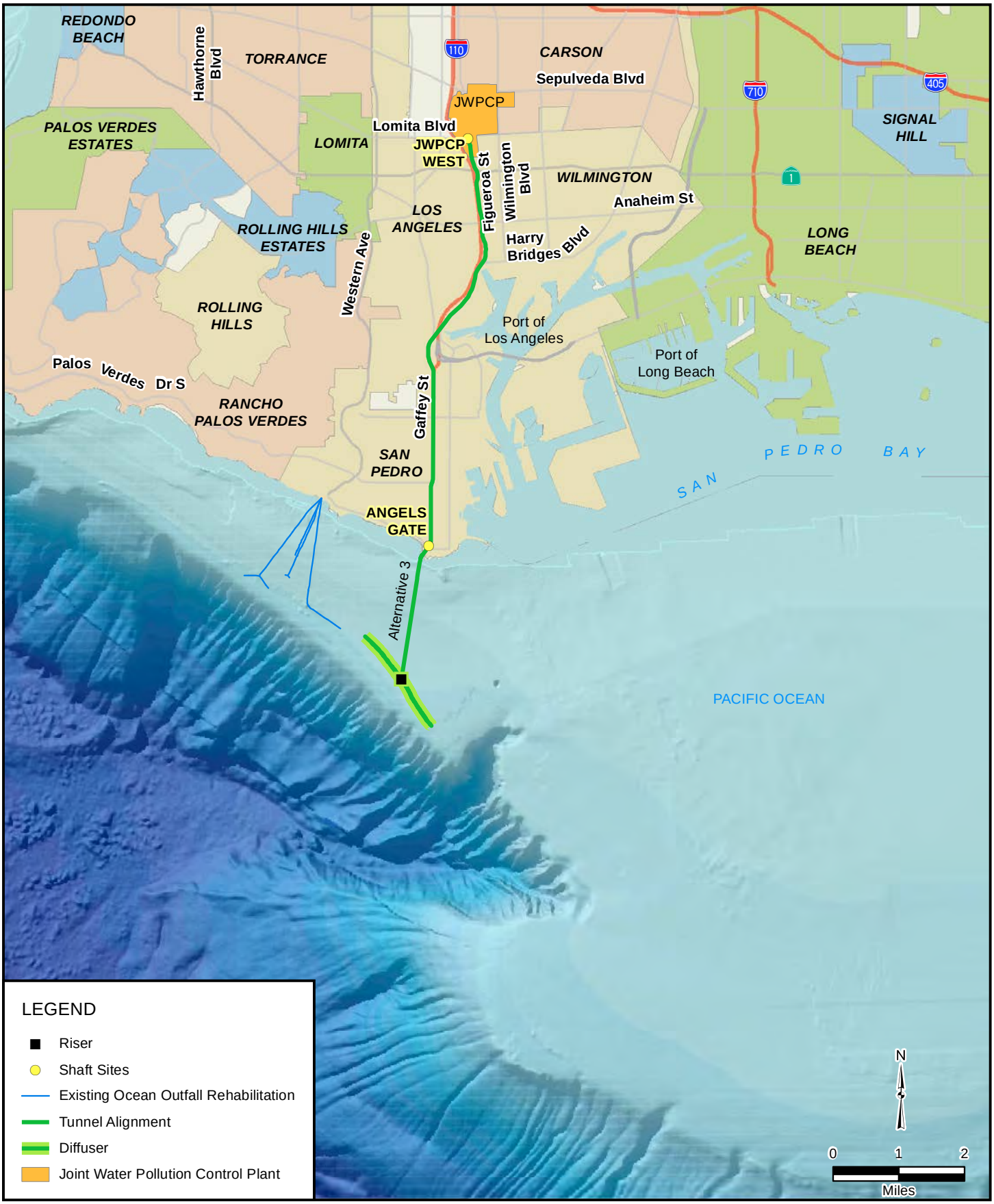


FIGURE 3-14

CLEARWATER Program

Ocean Discharge System Alternative 3 (Project)

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011

FIGURE 3-15

CLEARWATER Program

Ocean Discharge System Alternative 4 (Project)

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011

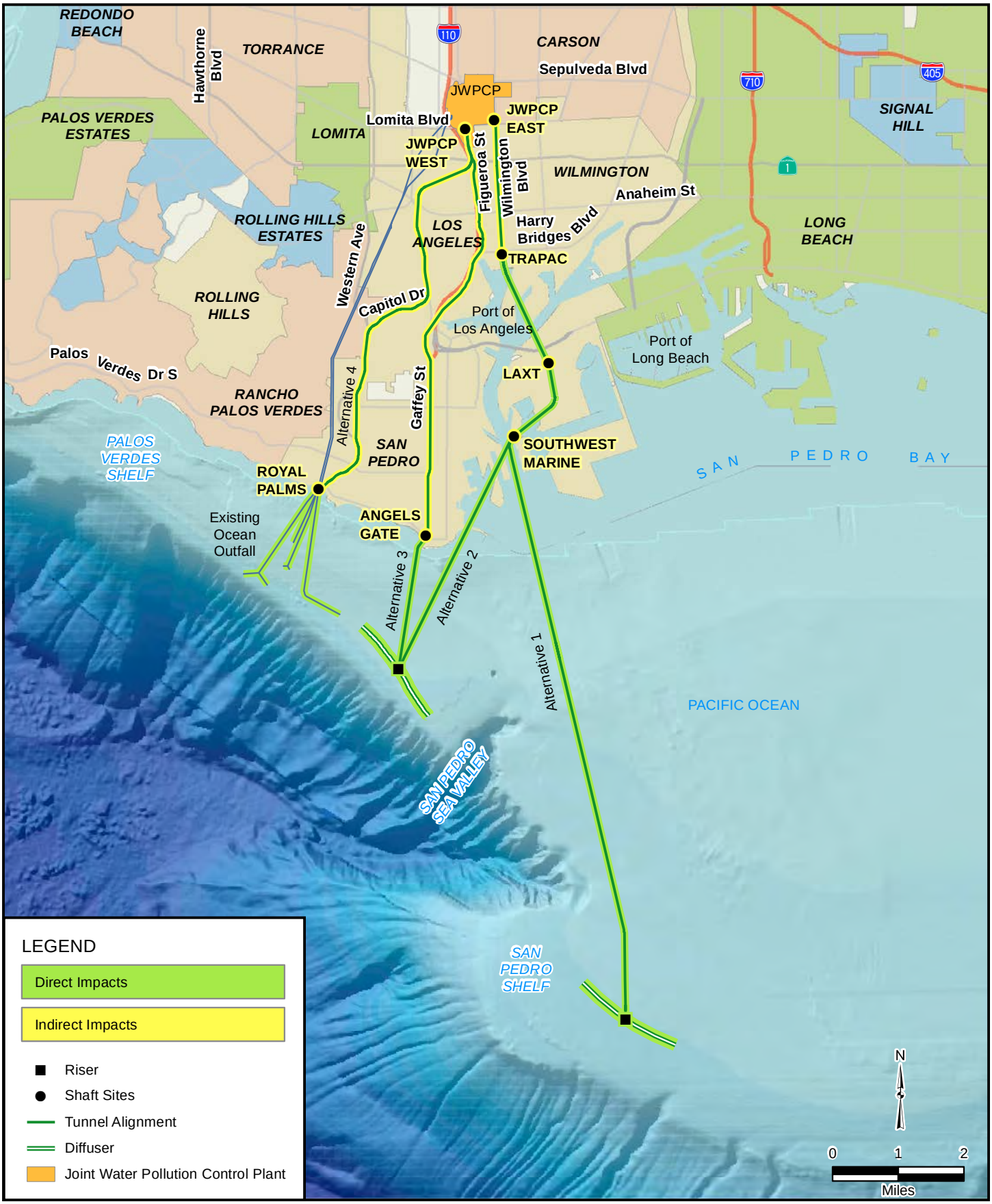


FIGURE 3-16

CLEARWATER Program

Federal NEPA Scope of Analysis

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011

Table 3-9. Project Elements by Alternative (Project) and Functional Category

	Functional Category		
Alternative (Project)	**Tunnel Alignment**	**Shaft Sites**	**Riser/Diffuser Area**
1	Wilmington to SP Shelf (Onshore and Offshore)	JWPCP East TraPac LAXT Southwest Marine	SP Shelf Existing Ocean Outfalls
2	Wilmington to PV Shelf (Onshore and Offshore)	JWPCP East TraPac LAXT Southwest Marine	PV Shelf Existing Ocean Outfalls
3	Figueroa/Gaffey to PV Shelf (Onshore and Offshore)	JWPCP West Angels Gate	PV Shelf Existing Ocean Outfalls
4[a]	Figueroa/Western to Royal Palms (Onshore)	JWPCP West Royal Palms	Existing Ocean Outfalls
5	No Project - See Section 3.4.1.5		
6	No Federal Action - See Section 3.4.1.6		

[a] Alternative 4 is the recommended alternative.

3.3.2.1 Tunnel Alignment

There are four potential tunnel alignments that would originate from the JWPCP. Three of these would extend underground to a riser and diffuser area in the Pacific Ocean and one would extend underground to the existing ocean outfall manifold structure at Royal Palms Beach. The federal NEPA scope of analysis for each alternative (project) is depicted on Figure 3-16. The project elements that are to be evaluated by the U.S. Army Corps of Engineers (Corps) as direct or indirect impacts are also identified on this figure. A detailed description of each tunnel alignment is provided in this section. Additionally, refer to Chapter 12 for a discussion on land uses, public right-of-way, and private properties adjacent to each tunnel alignment.

The tunnel would be constructed with a tunnel boring machine (TBM). The TBM, which would be placed underground at a shaft site, would be capable of excavating soil/rock and installing a tunnel liner as it advances. The excavated material would be removed for disposal or, possibly, beneficial use. Tunneling is expected to advance at an average rate of 35 feet per day through soil and an average rate of 40 feet per day through rock. Tunneling would occur 20 to 24 hours a day, 7 days a week, in two 10-hour or three 8-hour shifts. The TBM would require periodic maintenance, including the replacement of cutting bits.

The tunnel would be constructed between approximately 70 to 450 feet below ground surface or the ocean seafloor. The tunnel would have an excavated diameter of approximately 20 to 22 feet and an internal finished diameter of approximately 18 feet. The tunnel would be constructed of pre-fabricated steel-reinforced concrete segments with watertight gaskets. The lining system would be able to withstand the construction, ground, seismic, and hydrostatic loads.

Access for the tunneling process would take place at various shaft sites as further discussed in Section 3.3.2.2. Tunnel construction would require mobilization of various support equipment for activities such as, but not limited to, the installation of a rail system at the bottom of the shaft, assembly of the TBM, and installation of the ventilation system. In addition, the TBM trailing gear would be assembled at the surface for installation as the TBM advances. Preparation and construction of the tunnel

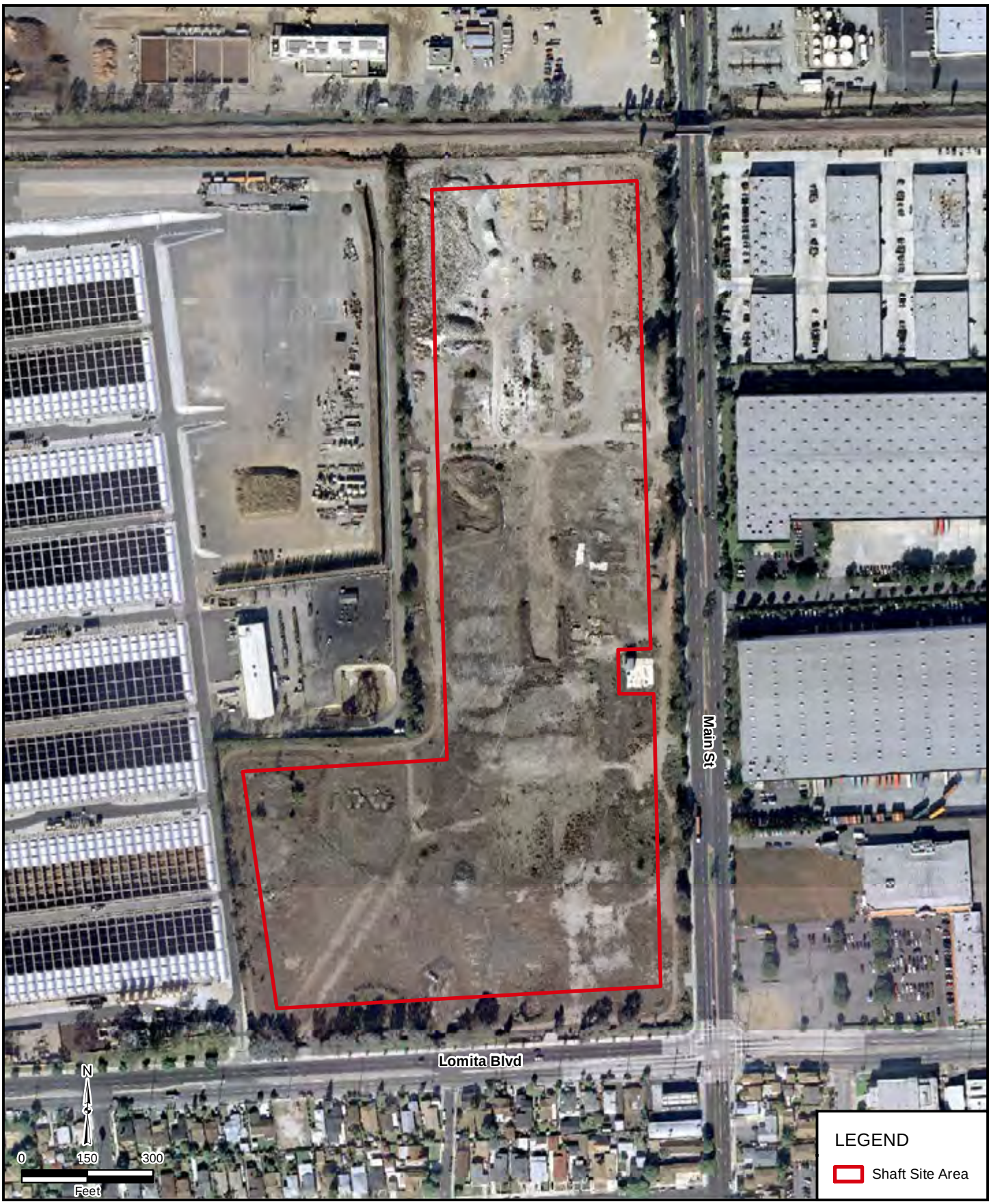


FIGURE 3-17

CLEARWATER Program

JWPCP East Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

would potentially require the equipment listed in Table 1 in Appendix 3-A. Depending on the alternative, one or two TBMs would be used for the construction of the tunnel.

Each tunnel alignment would cross the Palos Verdes Fault. The Palos Verdes Fault is located along the northeastern edge of the Palos Verdes Hills, approximately 1 to 2 miles southwest of the JWPCP. The fault extends about 62 miles from Santa Monica Bay through the Los Angeles Outer Harbor, to the San Pedro Channel, south of Newport Beach and 12 miles off the shore of Laguna Beach. Numerous small earthquakes have occurred near and west of the fault zone. A two-pass liner system would be installed along the portion of the tunnel that crosses the Palos Verdes Fault to minimize the potential for damage due to fault rupture. The Cabrillo Fault is a minor fault that generally parallels the Palos Verdes Fault, and extends approximately 6 miles offshore. Little is known about the probability of seismic activity along this fault line.

Two types of TBMs could be used to build the tunnel: earth-pressure balance (EPB) or slurry. These TBMs differ in how the excavated material generated from the tunneling operations is handled, transported, and treated. With an EPB TBM, locomotives convey the excavated material in rail cars back through the constructed portion of the tunnel to the shaft for removal by crane. The excavated material would be retained at the surface to allow any water to separate before removal. With a slurry TBM, a slurry is supplied by pipe from the ground surface of the shaft to the cutterhead of the TBM to suspend the excavated material, which is then pumped back to the shaft and up to the surface through pipes. In this case, the excavated material would be processed at a slurry separation plant at the surface of the shaft site prior to disposal. A bentonite additive is used in the slurry TBM method, which may preclude ocean disposal of the excavated material. For the purposes of evaluating the greatest potentially significant environmental impacts, the tunnel construction was analyzed assuming either an EPB TBM or a slurry TBM, depending on the resource area.

Wilmington to San Pedro Shelf Alignment

The onshore portion of the Wilmington to SP Shelf tunnel alignment would begin at the JWPCP and follow Wilmington Boulevard south to the Port of Los Angeles (Trans Pacific Container Service Corporation [TraPac] shaft site) for a distance of approximately 10,700 feet. The onshore tunnel depth at tunnel crown would range from approximately 100 to 200 feet below ground surface and would pass through land that is within the public right-of-way.

The offshore portion of the tunnel would be constructed approximately 100 to 200 feet below the ground surface or seafloor, beginning at the TraPac shaft site, extending southeast to cross under the West Basin Channel, Pier A, and the East Main Channel in Los Angeles Harbor. With a few exceptions, most of this land is within the Port of Los Angeles and is owned by the city of Los Angeles. The alignment would then pass under Yusen terminal in the Port of Los Angeles and under the eastern end of the Vincent Thomas Bridge to the Los Angeles Export Terminal (LAXT) shaft site. From the LAXT shaft site, the alignment would pass under Fish Harbor to the Southwest Marine shaft site, and continue to the diffuser area on the SP Shelf. The offshore portion of the alignment would extend approximately 65,200 feet.

This alignment would cross the Palos Verdes Fault zone between the LAXT and the Southwest Marine shaft sites. The alignment also would cross the Cabrillo Fault zone midway across the SP Shelf.

For this alignment, two TBMs would be required, with either one TBM originating from the JWPCP East shaft site and one TBM originating from the LAXT shaft site, or two TBMs traveling in opposite directions originating from the LAXT shaft site. Tunnel construction for the entire alignment would take approximately 6.5 years.

Wilmington to Palos Verdes Shelf Alignment

The onshore portion of the Wilmington to PV Shelf tunnel alignment is the same as the onshore portion of the Wilmington to SP Shelf alignment.

The offshore portion of the tunnel would be constructed approximately 100 to 250 feet below the ground surface or seafloor, beginning at the TraPac shaft site, extending southeast to cross under the West Basin, Pier A, and the East Basin Channel in Los Angeles Harbor. With a few exceptions, most of this land is within the Port of Los Angeles and is owned by the city of Los Angeles. The alignment would then pass under Yusen terminal in the Port of Los Angeles and under the eastern end of the Vincent Thomas Bridge to the LAXT shaft site. From the LAXT shaft site, the alignment would pass under Fish Harbor to the Southwest Marine shaft site, and continue to the diffuser area on the PV Shelf. The offshore portion of the alignment would extend approximately 38,100 feet.

This alignment would cross the Palos Verdes Fault zone between the LAXT and the Southwest Marine shaft sites. The alignment also would cross the Cabrillo Fault zone south of Cabrillo Beach.

For this alignment, two TBMs would be required, with either one TBM originating from the JWPCP East shaft site and one TBM originating from the LAXT shaft site, or two TBMs traveling in opposite directions originating from the LAXT shaft site. Tunnel construction for the entire alignment would take approximately 5 years.

Figueroa/Gaffey to Palos Verdes Shelf Alignment

The onshore portion of the Figueroa/Gaffey to PV Shelf tunnel alignment would begin at the JWPCP and follow Figueroa Street south to Harry Bridges Boulevard. The alignment would pass below land owned by the city of Los Angeles that is operated by the Port of Los Angeles and head southwest under John S. Gibson Boulevard. The alignment would then traverse Interstate (I-) 110 and private property where it would leave John S. Gibson Boulevard to join Gaffey Street to the west. It would follow Gaffey Street until veering southwest to the Angels Gate shaft site. The onshore portion of this alignment would be approximately 34,000 feet. The onshore tunnel depth at tunnel crown would range from approximately 70 to 370 feet below ground surface.

This alignment would cross the Palos Verdes Fault zone just southwest of the intersection of Figueroa and John S. Gibson Boulevard. It also would cross the Cabrillo Fault zone north of Angels Gate Park.

The offshore portion of the tunnel would be constructed approximately 100 to 250 feet below the ground surface or seafloor, beginning at Angels Gate Park and extending approximately 11,400 feet to the PV Shelf riser and diffuser area.

For this alignment, one TBM would be required, which would originate from the JWPCP West shaft site. Tunnel construction for this entire alignment would take approximately 5 years.

Figueroa/Western to Royal Palms Alignment

The Figueroa/Western to Royal Palms tunnel alignment would begin at the JWPCP, continue south on Figueroa Street, southwest under I-110 and Harbor Regional Park, south on North Gaffey Street, west on Capitol Drive, south on Western Avenue (through South Dodson Avenue) to Royal Palms Beach for a distance of approximately 36,600 feet. The onshore tunnel depth at tunnel crown would range from approximately 70 to 450 feet below ground surface, except for where the tunnel alignment would terminate and connect into the Royal Palms shaft and the existing ocean outfall manifold structure at Royal Palms Beach (approximately 30 feet below ground surface). The manifold structure is connected to the existing ocean outfalls that extend offshore from Royal Palms Beach to the PV Shelf. For

discussion on the existing conditions of Royal Palms Beach and the ocean outfalls, see Chapter 2 and Figure 2-12.

This alignment would cross the Palos Verdes Fault zone just south of Harbor Regional Park. It also would cross the Cabrillo Fault zone near the intersection of South Dodson Avenue and Western Avenue.

For this alignment, one TBM would be required, which would originate from the JWPCP West shaft site. Tunnel construction for this alignment would take approximately 4 years.

3.3.2.2 Shaft Sites

Shaft sites would be required along each alignment to facilitate tunnel construction. There would be three types of shaft sites: working, access, and exit.

- A working shaft site would be used for approximately 4 to 8 years as the aboveground staging area for the tunneling construction and support system activities. The working shaft would serve as the entry point for construction workers and as the exit point for all of the excavated material. The working shaft site would be within the immediate proximity of the tunnel alignment and require approximately 8 to 25 acres of relatively flat land. During both shaft and tunneling construction, the shaft site may contain a number of onsite facilities to support construction activities such as: a TBM cooling water tower; security, laboratory and office trailers; generators and substations; equipment, electrical, and mechanical shops; and excavated material, slurry separating, and storage areas. There would be, at a minimum, one crane at the shaft site for shaft construction and TBM removal, which could be up to approximately 100 feet tall. Approximately 35 to 40 construction workers would be on site per shift during tunnel construction. The site might also be used for permanent facilities upon completion of the tunnel construction.
- An access shaft site would serve as an entry and exit point for construction workers; TBM maintenance; support systems, such as ventilation; and removal of salvageable portions of the TBM at the project's conclusion. The facilities at the site may include construction trailers. A crane would also be used at the site for shaft construction and to facilitate access. The access shaft site would be approximately 0.5 to 3 acres.
- An exit shaft site would be used for the removal of the TBM and have a land requirement of approximately 1 to 4 acres. A crane would be used at the site for shaft construction and TBM removal.

Parking for the construction workers would be provided within the footprint of each shaft site. Multiple shaft sites may be constructed concurrently. It is estimated that approximately 10 construction workers would be needed to construct a shaft. The shaft construction work would likely occur in one 10-hour shift, 5 days per week. Preparation and construction of each shaft would potentially require the equipment listed in Table 1 in Appendix 3-A. General site preparation would take about 1 month and require approximately 10 trucks per day for materials removal. Shaft construction would take approximately 6 to 15 months, depending on the site. Once the tunnel construction is complete, all of the shafts would be capped with a removable cover for future access to support operation and maintenance of the tunnel. It would take approximately 2 to 5 months to demobilize the site after tunnel construction is complete.

For working shaft sites that support onshore tunnel alignment construction, an average of 48 trucks per day would be needed to haul away the excavated material. During maximum tunneling rates, there could be up to 95 truck trips per day. As the tunnel is advanced, supply trucks would also be required to bring

tunnel liner segments and other construction materials to the site. For an onshore alignment, there would be an average of 9 supply trucks per day and up to 16 supply trucks per day under maximum tunneling rates.

For working shaft sites that support offshore tunnel alignment construction, an average of 62 trucks per day would be needed to haul away the excavated material. During maximum tunneling rates, there could be up to 123 trucks per day. There would be an average of 10 supply trucks per day and up to 18 supply trucks per day under maximum tunneling rates.

It is anticipated that the majority of the excavated and cut material resulting from site preparation, shaft construction, and tunneling would be disposed of within approximately 50 miles of the shaft site. The excavated material would be regularly tested per American Society for Testing Materials standards for various contaminants. If the excavated material were considered hazardous, it would be properly handled and disposed of in accordance with all applicable requirements. The majority of the contaminated excavated material would be disposed of within approximately 200 miles of the shaft site. The supply trucks would likely originate from northern Los Angeles County.

JWPCP East Shaft Site (Working and/or Exit)

The JWPCP East shaft site would be located on approximately 25 acres within the JWPCP property boundary near the northwest corner of Main Street and Lomita Boulevard in the city of Carson, as shown on Figure 3-17.

The JWPCP East shaft site would function as either a working or an exit shaft site. Regardless of the shaft type, a noise barrier, approximately 20 feet in height, would be erected between the major sources of noise at the shaft site and nearby sensitive receptors. Access to the JWPCP East shaft site would likely occur from within the JWPCP via Figueroa Street or Sepulveda Boulevard. Site preparation would consist of clearing, grubbing, grading, and equipment mobilization. For the purposes of evaluating the greatest potentially significant environmental impacts, the site was analyzed as a working shaft site rather than an exit shaft site.

The shaft depth would be approximately 115 feet. The shaft diameter would be about 40 to 60 feet. During construction of the shaft, approximately 30 to 65 trucks per day would be required for delivery of supplies and removal of excavated material. Shaft construction would take about 10 to 12 months. Upon completion of the tunneling activities, this shaft would be converted into a drop structure and connected to the existing JWPCP effluent management infrastructure. Approximately 0.5 acre would be required at the shaft site for permanent facilities, which may include a pumping plant and would include a surge tower.

JWPCP West Shaft Site (Working)

The JWPCP West shaft site would be located mostly within the JWPCP property boundary on approximately 18 acres to the south and 1 acre to the north of West Lomita Boulevard near Figueroa Street in the cities of Los Angeles and Carson as shown on Figure 3-18.

The JWPCP West shaft site would function as a working shaft site. A noise barrier, approximately 20 feet in height, would be erected between the major sources of noise at the shaft site and nearby sensitive receptors. Access to the shaft site would likely occur from Figueroa Street via Lomita Boulevard, Pacific Coast Highway, or Sepulveda Boulevard. Site preparation would consist of clearing, grubbing, grading, and equipment mobilization.

FIGURE 3-18

CLEARWATER Program

JWPCP West Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

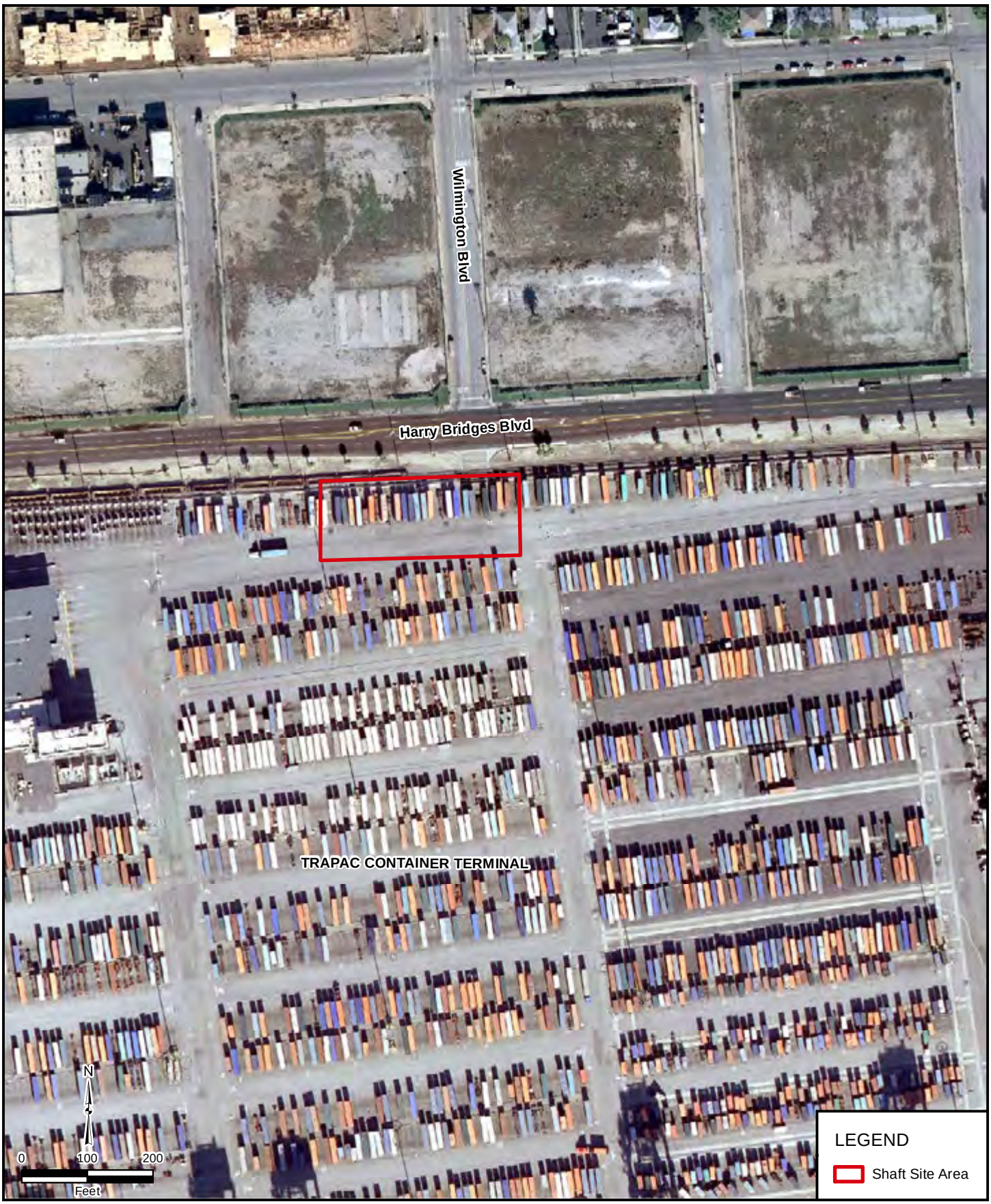


FIGURE 3-19

CLEARWATER Program

TraPac Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

The shaft depth would be approximately 115 feet (Alternative 3) or approximately 140 feet (Alternative 4) and the shaft diameter would be about 40 to 60 feet. During construction of the shaft, approximately 30 to 65 trucks per day would be required for delivery of supplies and removal of excavated material. Shaft construction would take about 10 to 12 months. Upon completion of the tunneling activities, this shaft would be converted into a drop structure and connected to the existing JWPCP effluent management infrastructure, located within the 1-acre area depicted on Figure 3-18 to the north of Lomita Boulevard. This connection would likely either be tunneled or jacked and bored under Lomita Boulevard. Approximately 0.5 acre would be required at the shaft site for permanent facilities, which would include a surge tower and possibly a pumping plant.

TraPac Shaft Site (Access)

The TraPac shaft site would be located south of the intersection of Harry Bridges Boulevard and Wilmington Boulevard within the Port of Los Angeles as shown on Figure 3-19 and would occupy less than 1 acre.

The TraPac shaft site would function as an access shaft site. Access to the shaft site would be through Port of Los Angeles property, either at the existing entrance at Figueroa Street and Harry Bridges Boulevard or at the future relocated entrance at the intersection of Harry Bridges Boulevard and Lagoon Avenue. Site preparation would include removal of existing concrete and asphalt.

The shaft depth would be approximately 165 feet and the shaft diameter would be about 25 to 35 feet. During construction of the shaft, approximately 30 to 65 trucks per day would be required for delivery of supplies and removal of excavated material. Shaft construction would take about 10 to 11 months. After construction of the tunnel, this shaft would be converted into a smaller belowground access structure that would be connected to the tunnel. A permanent access easement of approximately 0.3 acre would be needed for future operation and maintenance activities.

LAXT Shaft Site (Working and/or Exit)

The LAXT shaft site would be located on approximately 8.6 acres on Terminal Island within the Port of Los Angeles as shown on Figure 3-20. The LAXT shaft site would be located on Ferry Street across from the city of Los Angeles Terminal Island Water Reclamation Plant. The shaft would be located on the western portion of the former Petroleum Coke Storage and Reclaim Facility Site. The site is approximately 7 acres in size and is currently developed with railroad tracks maintained by the Port of Los Angeles, a bridge structure, and LAXT structures. The structures are slated for demolition by the Port of Los Angeles, and would be demolished prior to the start of project construction. The railroad tracks and bridge structures would remain.

The LAXT shaft site would function as either (1) a working shaft site that would allow tunnel boring work to take place in two directions or (2) both a working shaft for the entry of a TBM to construct the tunnel to the ocean and an exit shaft site that would allow for the removal of a TBM traveling from the JWPCP East shaft site. If tunnel boring took place in two directions at this site, the shaft size, the tunnel construction workforce, the excavated material truck trips, and the supply truck trips would double.

Access for construction workers would likely be at the intersection of Ferry Street and Eldridge Street, and access for construction equipment would likely be at the intersection of Ferry Street and LAXT. A noise barrier, approximately 20 feet in height, would be erected between the major sources of noise at the shaft site and nearby sensitive receptors. In conjunction with the Southwest Marine shaft site, this shaft site would provide access to the tunnel from each side of the Palos Verdes Fault. A valve would be installed at this site to allow for isolation of the tunnel segment crossing the Palos Verdes Fault. Site preparation would consist of clearing, grubbing, grading, and equipment mobilization. For the purposes

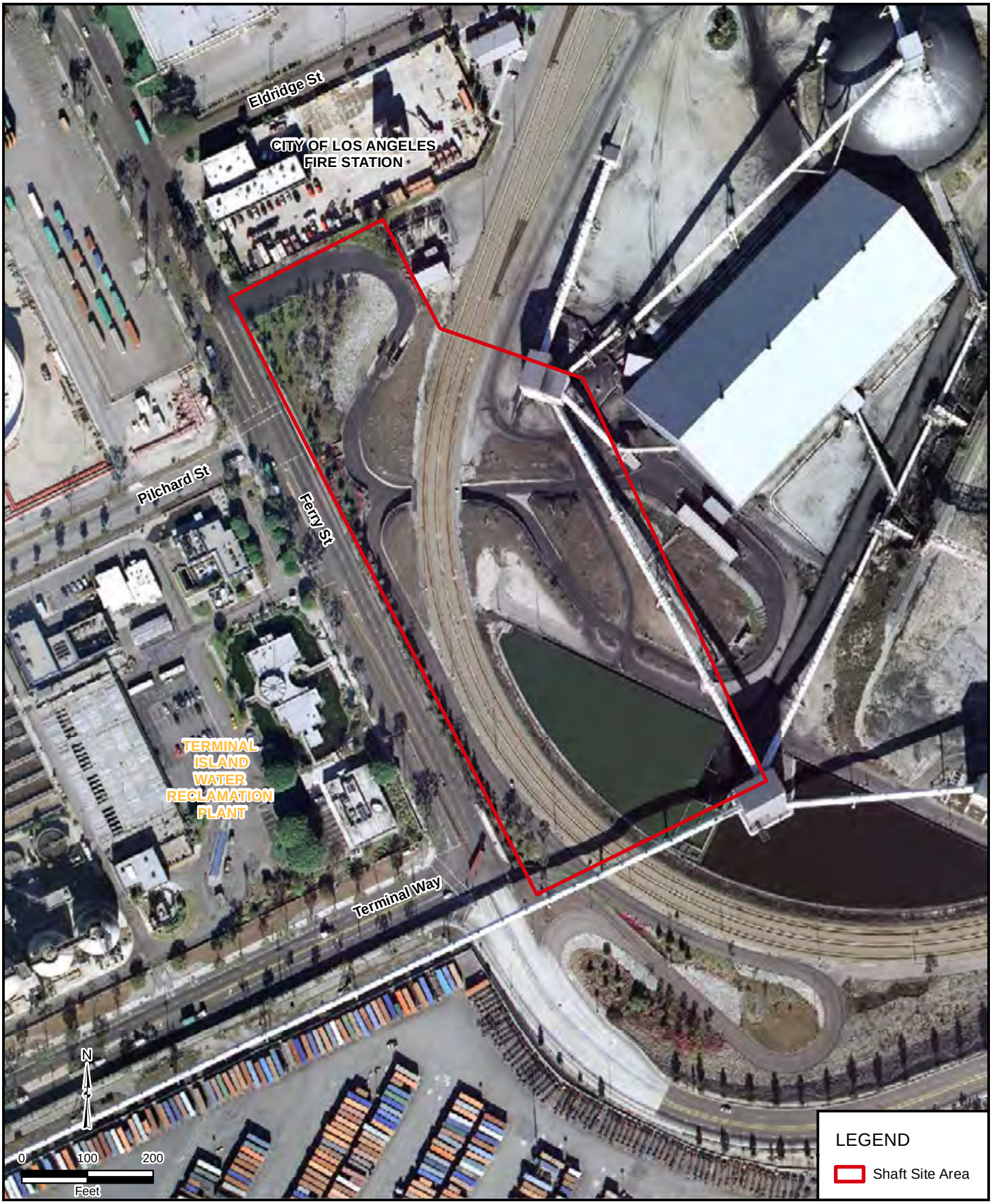


FIGURE 3-20

LAXT Shaft Site

CLEARWATER Program

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 3-21

CLEARWATER Program

Southwest Marine Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

of evaluating the greatest potentially significant environmental impacts, the site was analyzed as a working shaft site that would allow tunnel boring work to take place in two directions.

The shaft depth would be approximately 170 feet and the shaft diameter would be approximately 40 to 60 feet. During construction of the shaft, approximately 30 to 65 trucks per day would be required for delivery of supplies and removal of excavated material. Shaft construction would take about 12 to 15 months. After construction of the tunnel, this shaft would be converted into a smaller belowground access structure that would be connected to the tunnel. A permanent access easement of approximately 0.4 to 0.5 acre would be needed for future operation and maintenance activities.

Southwest Marine Shaft Site (Access)

The Southwest Marine shaft site would be located on less than 1 acre to the west of South Seaside Avenue and to the south of the existing Southwest Marine shipbuilding warehouses in the Port of Los Angeles as shown on Figure 3-21.

The Southwest Marine shaft site would function as an access shaft. A noise barrier, approximately 20 feet in height, would be erected between the major sources of noise at the shaft site and nearby sensitive receptors. Access to the Southwest Marine shaft site would likely be at South Seaside Way via Ferry Street/Terminal Way. In conjunction with the LAXT shaft site, this shaft site would provide access to the tunnel from each side of the Palos Verdes Fault. A valve would be installed at this site to allow for isolation of the tunnel segment crossing the Palos Verdes Fault. Site preparation would include the removal of existing concrete and asphalt.

The shaft depth would be approximately 170 feet and the shaft diameter would be about 25 to 35 feet. During construction of the shaft, approximately 30 to 65 trucks per day would be required for delivery of supplies and removal of excavated material. Shaft construction would take about 10 to 11 months. After construction of the tunnel, this shaft would be converted into a smaller belowground access structure that would be connected to the tunnel. A permanent access easement of approximately 0.3 acres would be needed for future operation and maintenance activities.

Angels Gate Shaft Site (Access)

The Angels Gate shaft site would be located on approximately 3 acres near the southern boundary of Angels Gate Park near the intersection of South Gaffey Street and Shepard Street as shown on Figure 3-22.

The Angels Gate shaft site would function as an access shaft site. A noise barrier, approximately 20 feet in height, would be erected between the major sources of noise at the shaft site and nearby sensitive receptors. Access to the Angels Gate shaft site would likely occur from Shepard Street via South Gaffey Street. A valve would also be installed to allow for isolation of the tunnel segment between the Angels Gate and JWPCP West shaft sites. Site preparation would consist of clearing, grubbing, grading, and equipment mobilization.

The shaft depth would be approximately 245 feet and the shaft diameter would be about 25 to 35 feet. During construction of the shaft, approximately 10 to 40 trucks per day would be required for delivery of supplies and removal of excavated material. Shaft construction would take about 8 to 9 months. After construction of the tunnel, this shaft would be converted into a smaller belowground access structure that would be connected to the tunnel. A permanent access easement of approximately 0.3 acre would be needed for future operation and maintenance activities.

FIGURE 3-22

CLEARWATER Program

Angels Gate Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011

FIGURE 3-23

CLEARWATER Program

Royal Palms Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011

Royal Palms Shaft Site (Exit)

The Royal Palms shaft site would be located on approximately 1.1 acres, mostly within Sanitation Districts' property surrounding the existing ocean outfall manifold structure at Royal Palms Beach near the beach access road off of West Paseo Del Mar as shown on Figure 3-23. The Royal Palms site would function as an exit shaft site for removal of the TBM upon tunnel completion. The shaft site would also be used to connect the new tunnel to the existing ocean outfalls at the manifold structure. A noise barrier, approximately 20 feet in height, would be erected between the major sources of noise at the shaft site and nearby sensitive receptors. Site preparation would consist of clearing, grubbing, grading, and equipment mobilization.

The shaft depth would be approximately 50 feet and the shaft diameter would be about 25 to 35 feet. During construction of the shaft, approximately 10 to 40 trucks per day would be required for delivery of supplies and removal of excavated material. Shaft construction would take about 6 to 9 months.

Alternatives 1 through 3 (Project) would require a new riser and diffuser area, which would be constructed in the Pacific Ocean; Alternative 4 (Project) would utilize the existing diffusers and ocean outfalls. A new underground manifold structure would be constructed next to the exit shaft to facilitate the connections between the tunnel and the existing ocean outfalls. Valves would be installed to control the amount of effluent flow to each of the outfalls and to allow for isolation of the new tunnel between the Royal Palms and JWPCP West shaft sites. There would be approximately 5 to 10 construction workers on site for a 10-hour shift per day, 5 days per week, for approximately 2 years to construct the exit shaft, manifold, valves, and piping interconnections. Demobilization of the site would take about 3 months. After construction, the beach parking area would be restored to its original configuration. A permanent access easement of approximately 0.1 acre would be needed for future operation and maintenance activities.

3.3.2.3 Riser and Diffuser Area

At the downstream terminus of the offshore tunnel alignment for Alternatives 1 through 3 (Project), a riser would be constructed to physically connect the tunnel to a seafloor diffuser as depicted on Figure 3-24. Alternative 4 (Project) would connect to the existing ocean outfalls.

Riser

For Alternatives 1 through 3 (Project), the riser would be constructed of steel with a concrete lining. The riser inner casing diameter would be approximately 13 feet, and the outer casing diameter would be approximately 16 feet. Depending on the diffuser pipe material, the riser head configuration would vary as shown on Figure 3-25. The top of the riser head structure would be positioned approximately 20 feet above the surrounding seafloor. Although the riser would be installed outside of designated ship anchorage areas, ballast rock, the quantity of which is estimated in Section 3.3.2.4, would be placed within a 75-foot radius around the riser head to protect the structure.

Diffuser

For Alternatives 1 through 3 (Project), the seafloor diffuser would be constructed from steel pipe, reinforced concrete pipe (RCP), or high-density polyethelene (HDPE) pipe as shown on Figure 3-25. Each type of piping would include diffuser ports that would be spaced to facilitate initial dilution and distribution of the treated effluent. Although the diffuser would be located outside of designated ship anchorage areas, it would be protected by ballast rock to withstand impact forces from falling anchors and to minimize the risk of snagging by anchor wires and chains.

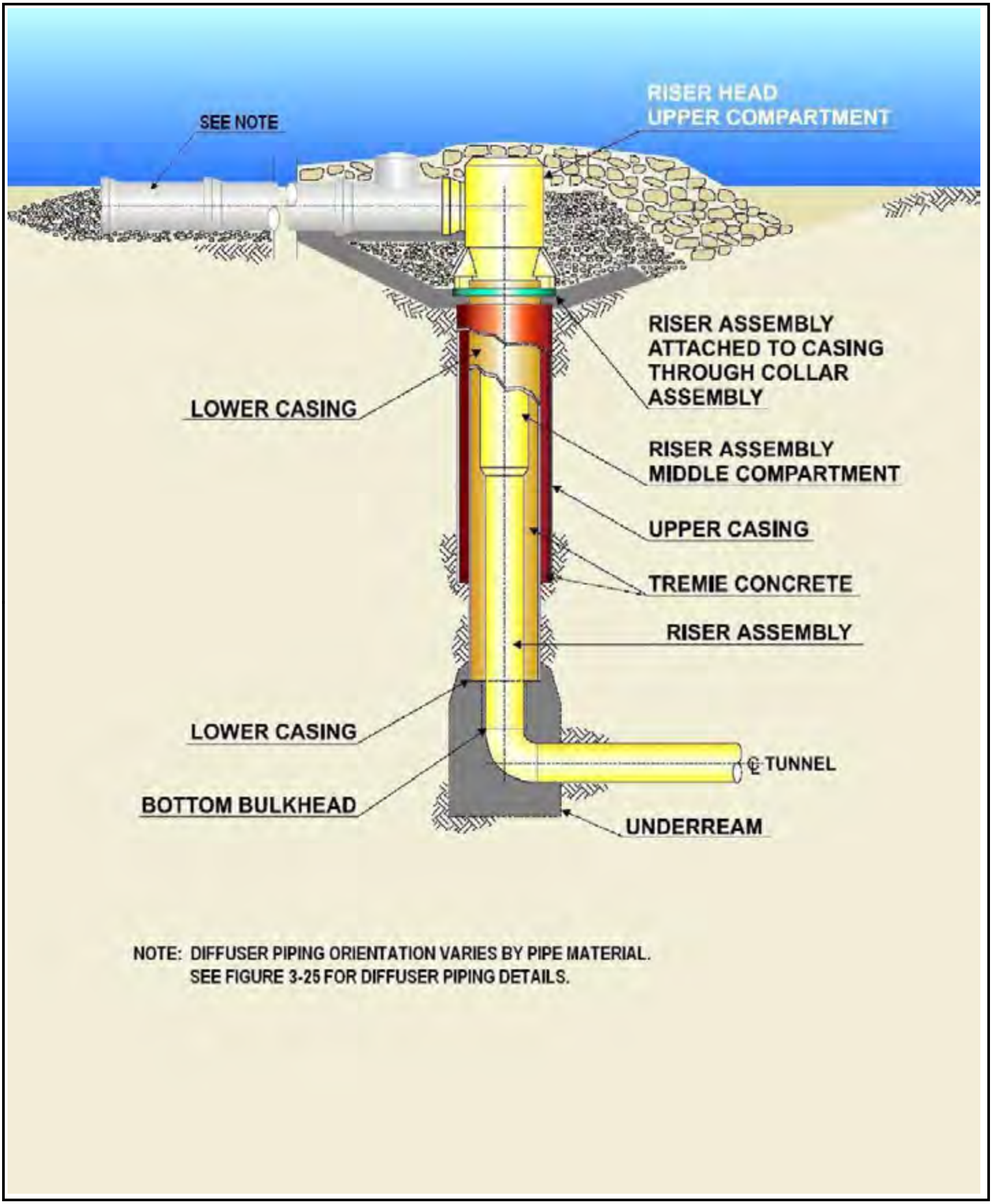
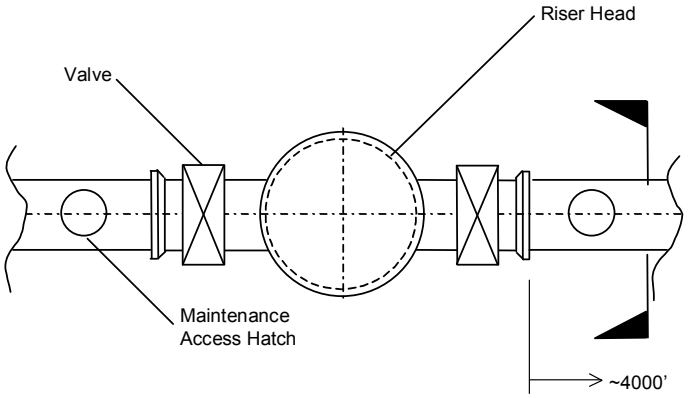


FIGURE 3-24

Riser Configuration

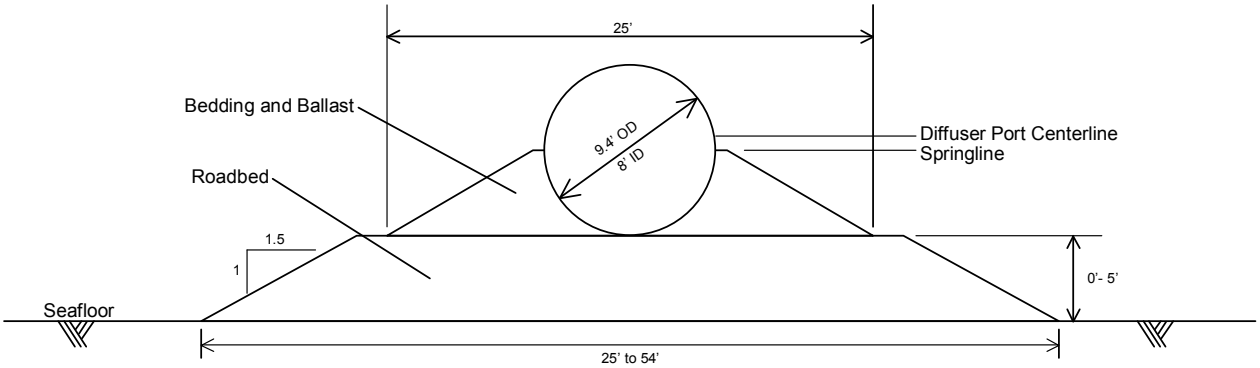
CLEARWATER Program

Source: Sanitation Districts of Los Angeles County 2011, Parsons 2011



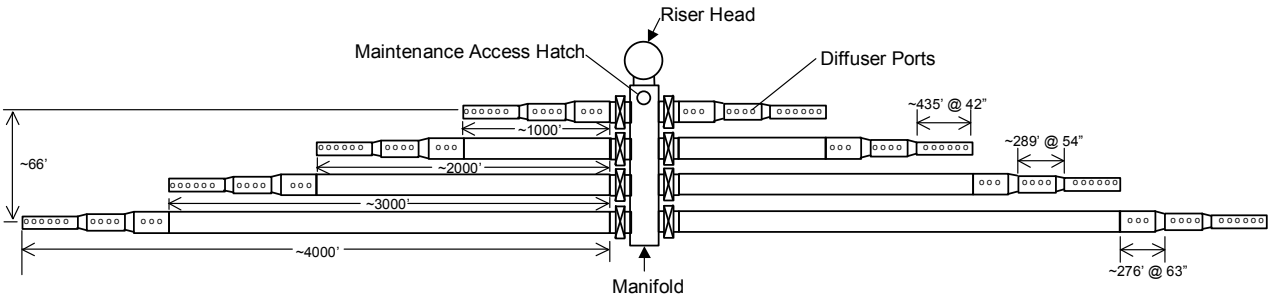
Steel or RCP Diffuser Piping (Plan View)

Not to Scale



Steel or RCP Diffuser Piping (Cross-Section)

Not to Scale



HDPE Diffuser Piping (Plan View)

Not to Scale

FIGURE 3-25

CLEARWATER Program

Riser Head Structure and Diffuser Configuration Options

Source: Sanitation Districts of Los Angeles County 2011, Parsons 2011

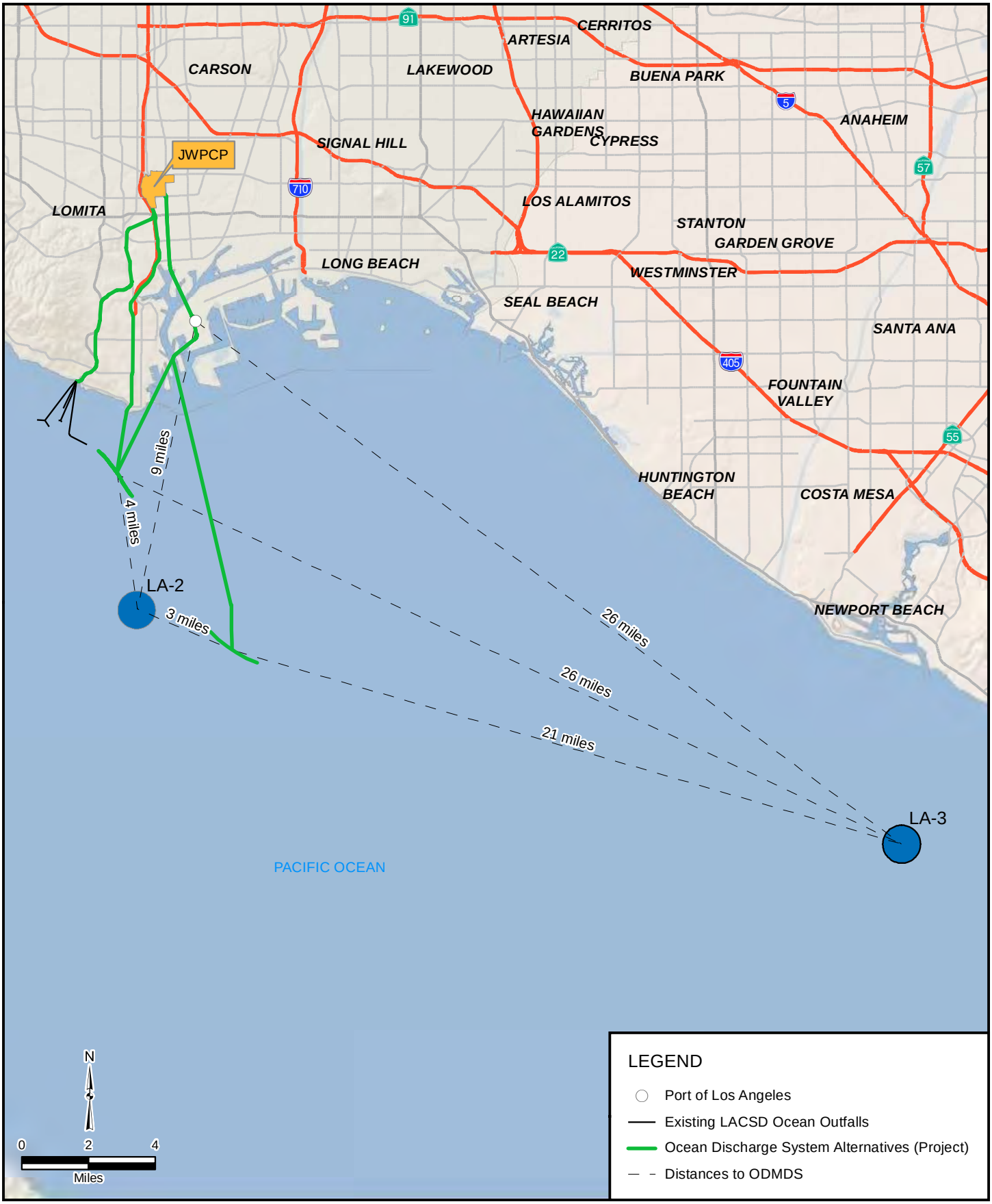


FIGURE 3-26

CLEARWATER Program

Location of Ocean Dredged Material Disposal Sites

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011, Thomas Bros 2011

If the diffuser were constructed of steel or RCP, the diffuser would consist of two legs oriented out of the riser head, 120 or 180 degrees apart. Each leg would be approximately 4,000 feet long. The inner diameter of the steel or RCP diffuser would incrementally decrease in size ranging from approximately 132 inches to 48 inches. Installation of the steel or RCP diffuser would require seafloor grading and possibly trenching or dredging for site preparation purposes. The trenched materials would be sidecast, if feasible. The diffuser installation may also require construction of a roadbed base of ballast rock that would be approximately 25 to 54 feet wide and up to 5 feet thick. The roadbed would be placed either in the trench or on the graded seafloor. The diffuser would be placed on the roadbed with additional ballast rock up to the center of the pipe for stability. The riser and diffuser would cover a seafloor area of approximately 5 to 10 acres, depending on the required roadbed depth. Refer to Section 3.3.2.4 for the estimated quantities of dredged materials and ballast rock for the steel or RCP diffuser.

If the diffuser were constructed of HDPE, no trenching would be required. The HDPE would be placed directly on the seafloor, which may require some minor grading. There would also be a limited amount of ballast rock required to protect the piping and riser as estimated in Section 3.3.2.4. The HDPE design would consist of a manifold with eight diffuser legs configured in a sequentially staggered array from shortest to longest. The pipe outer diameter would range in size from approximately 63 inches to 42 inches. The riser, manifold, and diffuser would cover a seafloor area of approximately 8 acres. Approximately 1,500 pre-installed concrete anchor blocks would be attached to HDPE piping to provide ballast during the sinking and installation process as well as to provide stability against ocean currents and wave-induced hydrodynamic loading.

Riser and Diffuser Assembly and Construction

Both the riser and diffuser assembly would be pre-fabricated on land prior to ocean construction. While the specific location for pre-assembly of the parts and materials for the riser and diffuser is still unknown, for this analysis it was assumed that pre-assembly would occur at the Pasha Terminal within the Port of Los Angeles. Pre-assembly and construction of the riser and diffuser would potentially use equipment as listed in Table 1 in Appendix 3-A. For pre-assembly, approximately 10 to 15 construction workers would be on site for a 10-hour shift per day, 5 days per week, for about 8 to 10 months.

The riser and diffuser construction activities and the corresponding marine vessels required for the work are summarized in Table 3-10. To prepare the site for riser installation, the unconsolidated seafloor material would be sidecast or removed and disposed of as described in Section 3.3.2.3. Hydro-jetting or pile-driving would be used to install the riser casing. The majority of the riser and diffuser construction work would be based on one 10-hour shift per day, 5-day-per-week schedule. However, when the pre-fabricated riser assembly is transported to the installation site, the construction work would take place on a continuous 24-hour-per-day basis for approximately 1 week.

All of the work including mobilization, pre-assembly, site preparation, construction, and demobilization would take approximately 24 months for the riser and approximately 6 to 12 months for the diffuser. There are two proposed riser and diffuser locations.

San Pedro Shelf

The SP Shelf riser and diffuser assembly site would be located approximately 7.5 miles from the Port of Los Angeles breakwater. The riser assembly would be located at a depth of approximately 200 feet of water and would extend approximately 110 feet below the seafloor to meet the tunnel.

The SP Shelf riser and diffuser area is a relatively flat area of the upper slope along the southwest edge of the SP Shelf. It is not located within the boundaries of the EPA designated dichlorodiphenyltrichloroethane/polychlorinated biphenyl (DDT/PCB) contaminated sediment study area.

Palos Verdes Shelf

The PV Shelf riser and diffuser assembly site would be located approximately 2 miles from Point Fermin. The riser assembly would be located at a depth of approximately 175 feet of water and would extend approximately 145 feet below the seafloor to meet the tunnel. It should be noted that construction activities for diffuser placement on the PV Shelf would include grading of the seafloor and placing of ballast rocks. Sediment would not be sidecast or brought to the surface for disposal.

The PV Shelf riser and diffuser area is within the boundaries of the EPA-designated DDT/PCB contaminated sediment study area. An estimated 1,800 metric tons of DDT was discharged onto the PV Shelf between 1953 and 1971. Today, much of the original DDT that was discharged has dispersed throughout the greater PV Shelf, but a reservoir of approximately 100 metric tons remains buried in the seafloor centered on the existing outfalls.

Existing Ocean Outfalls

The existing ocean outfalls extend from the existing manifold structure at Royal Palms Beach offshore into the Pacific Ocean as described in Chapter 2 and Section 3.3.2.2. For Alternatives 1 through 3 (Project), JWPCP effluent would primarily be discharged through the new ocean discharge system. However, the existing ocean outfalls may be used during high flow conditions or during maintenance of the new ocean discharge system. For Alternative 4 (Project), JWPCP effluent would continue to be discharged through the existing ocean outfalls.

Alternatives 1 through 4 (Project) would include improvements to the existing ocean outfalls, such as joint repairs and re-ballasting. The re-ballasting work would occur on the existing 72-, 90- and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A small derrick barge would be used to place the ballast rock around the outfalls and support the joint repair work. Joint repairs would involve temporarily removing some of the existing ballast rock from around the outfall to fully expose the joint being repaired. A team of divers would repair an estimated 10 to 40 joints and hand-shovel approximately 2 cubic yards of sediment from each joint. Mechanical dredging would not be required. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. Cathodic protection would also be restored or added where necessary. The marine vessels required for this work are listed in Table 3-10. The majority of the construction work would be based on one 10-hour shift per day, 5 days per week. It is estimated that approximately eight to ten construction workers would be needed for the rehabilitation work. Joint repairs and transport of construction workers would require a work vessel and crew vessel operating one daily round-trip for approximately 1 month, which would most likely deploy from the Port of Los Angeles. All of the work including mobilization, construction, and demobilization would take approximately 9 months.

Table 3-10. Anticipated Marine Construction Activities and Vessels

Project Activity	No.	Vessel Type	Trip Frequency	Schedule	Distance (miles)
Riser					
All work	1	Jack-up Platform or Barge and Tugboat	1 round-trip	24 months	8–16
All work	1–2	Supply Barge and Tugboat	1 round-trip per day	24 months	8–16
Transport and position riser assembly	2	Tugboat	1 round-trip	1 week	8–16
Crew: riser assembly installation	1	Crew Vessel	3 round-trip per day	1 month	8–16
Crew: all other work	1	Crew Vessel	1 round-trip per day	23 months	8–16
Steel or RCP Diffuser					
All work	1	Derrick Barge and Tugboat	1 round-trip	12 months	8–16
Transport diffuser piping	1	Supply Barge and Tugboat	1 round-trip per day	12 months	8–16
Transport ballast rock[a]	1–2	Supply Barge and Tugboat	1 round-trip per 1–2 days	12 months	20–175
Crew: all work	1	Crew Vessel	1 round-trip per day	12 months	8–16
HDPE Diffuser					
Site preparation	1	Derrick Barge and Tugboat	1 round-trip	6 months	8–16
Placement of diffuser piping	1	Pull Barge and Tugboat	1 round-trip	1 month	8–16
Placement of diffuser piping	1	Pump Barge and Tugboat	1 round-trip	1 month	8–16
Transport ballast rock[a]	1–2	Supply Barge and Tugboat	1 round-trip per 1–2 days	60–120 days	20–175
Transport and position diffuser piping	2–4	Tugboat	1 round-trip per day	1 month	8–16
Crew: all work	1	Crew Vessel	1 round-trip per day	6 months	8–16
Existing Ocean Outfalls Rehabilitation					
Transport ballast rock[b]	1	Supply Barge and Tugboat	1 round-trip per 1–2 days	2 months	20–175
Placement of ballast rock	1	Derrick Barge	1 round-trip	1 month	6–8
Transport of materials	1	Supply Barge and Tugboat	1 round-trip per week	1 month	6–8
Joint repair	1	Work Vessel	1 round-trip per day	1 month	6–8
Crew: all work	1	Crew Vessel	1 round-trip per day	1 month	6–8

[a] 60 to 120 total trips

[b] 15 to 20 total trips

3.3.2.4 Dredge, Fill, and Ocean Disposal Activities

In accordance with Section 404 of the Clean Water Act (CWA); Section 10 of the Rivers and Harbors Act (RHA); and Section 103 of the Marine Protection, Research, and Sanctuaries Act (MPRSA), the Corps has statutory authority over dredging and other work in navigable waters of the United States (waters of the U.S.), discharge of dredged or fill material in waters of the U.S., and transport of dredged materials for ocean disposal, respectively. The estimated volumes of dredged material expected from the project are summarized in Table 3-11. As stated in Section 3.3.2.3, the dredged material for the proposed steel or RCP diffuser would be sidecast, if feasible. For the proposed shaft sites, offshore tunnel, and riser, dredged material determined to be suitable for ocean disposal could be potentially disposed at an Ocean Dredged Material Disposal Site (ODMDS). LA-2 and LA-3 are the two ODMDSs in the vicinity of the project, as identified on Figure 3-26. LA-2 is located approximately 4 miles from the PV Shelf site, 3 miles from the SP Shelf site, and 9 miles from the Port of Los Angeles. LA-3 is located approximately 26 miles from the PV Shelf site, 21 miles from the SP Shelf site, and 26 miles from the Port of Los Angeles. While the specific location from which the excavated dredged material would be loaded onto barges is still unknown, for this analysis it was assumed that the barges would be loaded at Fish Harbor (also within the Port of Los Angeles), which is approximately 0.5 miles from the LAXT shaft site. Any contaminated sediments would be disposed of at inland facilities in accordance with all applicable regulations.

Table 3-11. Estimated Ocean Dredged Materials

Project Activity	Range of Estimated Dredged Material (cubic yards)
Offshore Tunnel Alignment	5,000,000–30,000,000
Riser	40,000–45,000
Steel or RCP Diffuser	10,000–50,000
HDPE Diffuser	N/A
N/A = not applicable	

The estimated volumes of ballast rock fill material expected for the project are summarized in Table 3-12. As stated in Section 3.3.2.3, ballast rock would be needed as bedding material for both the riser and diffuser construction for Alternatives 1, 2, and 3 (Project). The ballast rock would be placed in the diffuser trench prior to pipe installation and would be placed around the riser and diffuser piping after installation. For Alternatives 1 through 4 (Project), ballast rock would be needed to re-ballast along the existing ocean outfalls. The ballast rock would be barged to the site.

Table 3-12. Estimated Ballast Rock Material

Project Activity	Range of Estimated Ballast Rock Material (cubic yards)
Riser and Steel or RCP Diffuser	30,000–95,000
Riser and HDPE Diffuser	7,000–20,000
Existing Ocean Outfalls	15,000–18,000

3.3.2.5 Alternatives (Project) Summary

Four alternatives (project), which include rehabilitation of the existing ocean outfalls, were identified in the MFP and are described in Table 3-9. Each alternative (project) is summarized in the following sections.

Alternative 1 (Project)

Alternative 1 (Project) would consist of the Wilmington to SP Shelf tunnel alignment; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; the SP Shelf riser and diffuser area; and the rehabilitation of the existing ocean outfalls. The estimated construction schedule is shown in Table 3-13.

Alternative 2 (Project)

Alternative 2 (Project) would consist of the Wilmington to PV Shelf tunnel alignment; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; the PV Shelf riser and diffuser area, and the rehabilitation of the existing ocean outfalls. The estimated construction schedule is shown in Table 3-13.

Alternative 3 (Project)

Alternative 3 (Project) would consist of the Figueroa/Gaffey to PV Shelf tunnel alignment; the JWPCP West and the Angels Gate shaft sites; the PV Shelf riser and diffuser area; and the rehabilitation of the existing ocean outfalls. The estimated construction schedule is shown in Table 3-13.

Alternative 4 (Project)

Alternative 4 (Project) would consist of the Figueroa/Western to Royal Palms tunnel alignment; the JWPCP West and Royal Palms shaft sites; the existing ocean outfall manifold interconnection; and the rehabilitation of the existing ocean outfalls. The estimated construction schedule is shown in Table 3-13.

3.3.2.6 Project Schedule

The estimated construction schedule for each of the alternatives (project) is summarized in Table 3-13. Final design is estimated to take approximately 2.5 years, with anticipated construction durations ranging from 6.5 to 8 years.

3.4 Alternatives Summary

3.4.1 Alternatives Evaluated

The system-wide alternatives described in this section are assembled from a combination of the program and project alternatives. All four of the program-level component areas (wastewater conveyance and treatment, WRP effluent management, solid processing, and biosolids management) are common to all of the alternatives. Therefore, only the project-level alternatives are summarized and further detailed for comparison in Table 3-14. This document presents a reasonable range of alternatives as required by CEQA and NEPA, and includes the No-Project Alternative pursuant to CEQA, and the No-Federal-Action Alternative pursuant to NEPA.

3.4.1.1 Alternative 1

At the program level, Alternative 1 would include conveyance improvements; plant expansion at the SJCWRP; process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; WRP effluent management at all the WRPs; and solids processing, biosolids management, and effluent management at the JWPCP. At the project level, Alternative 1 would include the Wilmington to SP Shelf tunnel alignment; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; the SP Shelf riser and diffuser area; and the rehabilitation of the existing ocean outfalls.

Table 3-13. Anticipated Alternative (Project) Schedules

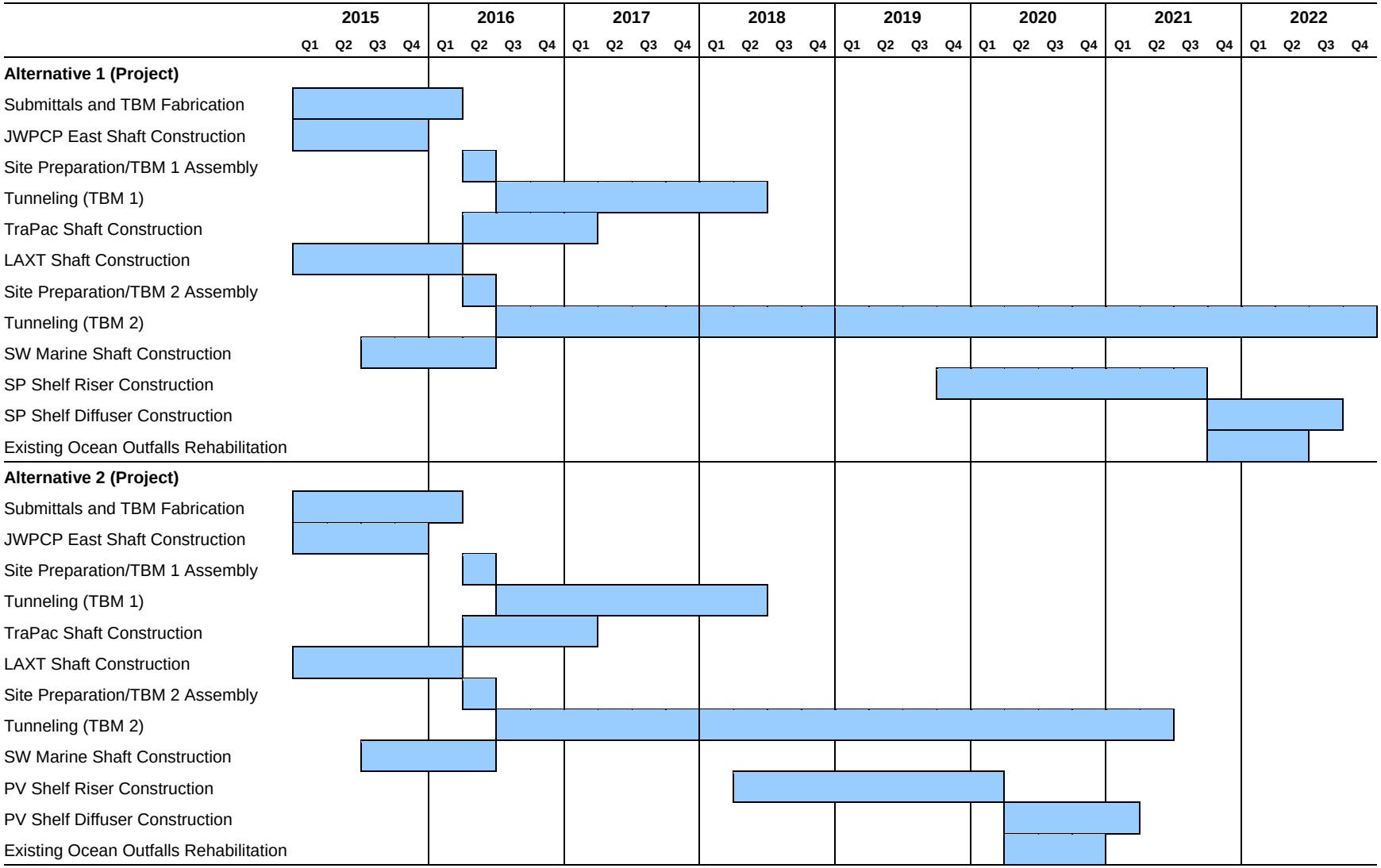


Table 3-13 (Continued)

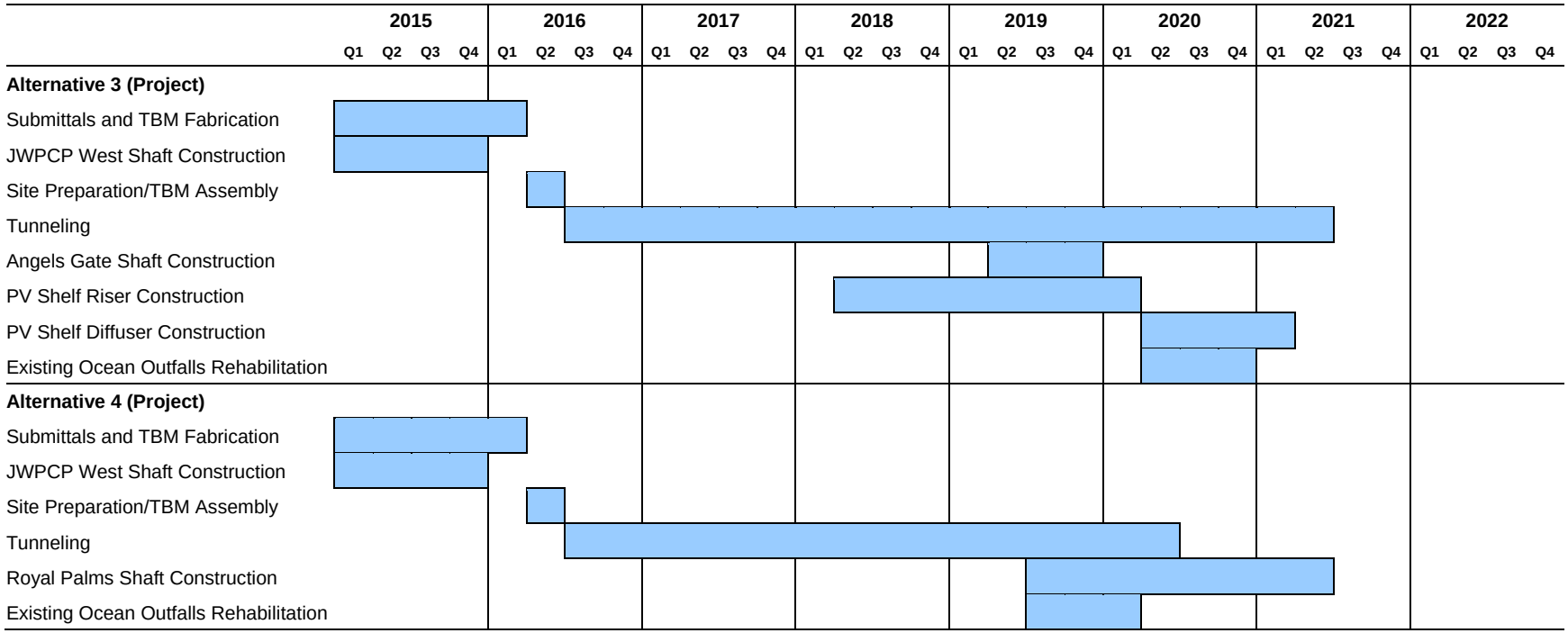


Table 3-14. Alternatives Summarized at the Project Level

	Tunnel Alignment				Shaft Sites							Riser/Diffuser Area		
Alternative[a]	**Wilmington to SP Shelf**	**Wilmington to PV Shelf**	**Figueroa/ Gaffey to PV Shelf**	**Figueroa/ Western to Royal Palms**	**JWPCP East**	**JWPCP West**	**TraPac**	**LAXT**	**SW Marine**	**Angels Gate**	**Royal Palms**	**SP Shelf**	**PV Shelf**	**Existing Ocean Outfalls**
1	X				X		X	X	X			X		X
2		X			X		X	X	X				X	X
3			X			X				X			X	X
4 (Recommended)				X		X					X			X
5 (No Project)														
6 (No Federal Action)														

[a] The program elements are not shown in this table because they are common to all alternatives.

3.4.1.2 Alternative 2

At the program level, Alternative 2 is identical to Alternative 1. At the project level, Alternative 2 would include the Wilmington to PV Shelf tunnel alignment; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; the PV Shelf riser and diffuser area; and the rehabilitation of the existing ocean outfalls.

3.4.1.3 Alternative 3

At the program level, Alternative 3 is identical to Alternative 1. At the project level, Alternative 3 would include the Figueroa/Gaffey to PV Shelf tunnel alignment; the JWPCP West and Angels Gate shaft sites; the PV Shelf riser and diffuser area; and the rehabilitation of the existing ocean outfalls.

3.4.1.4 Alternative 4 (Recommended Alternative)

Alternative 4 is the recommended alternative. At the program level, Alternative 4 is identical to Alternative 1. At the project level, Alternative 4 would include the Figueroa/Western to Royal Palms tunnel alignment; the JWPCP West and Royal Palms shaft sites; and the rehabilitation of the existing ocean outfalls.

3.4.1.5 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an EIR must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what would be reasonably expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the 2010 Plan.

The following related projects and reasonably foreseeable actions as recommended by the 2010 Plan could occur even if there were no project:

- Expand the SJCWRP to a treatment capacity of 125 MGD
- Upgrade and provide relief for the existing conveyance system
- Continue current WRP effluent management practices
- Construct additional solids processing facilities
- Continue current biosolids management practices and identify new practices
- Continue use of existing ocean discharge system

Program elements under the No-Project Alternative would be the same as those discussed in Alternatives 1, 2, 3, and 4, excluding process optimization at the WRPs. There would be no construction of a new or modified ocean discharge system from the JWPCP and the existing ocean outfalls would not be rehabilitated. Therefore, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

Under the No-Project Alternative, the existing ocean discharge system would be insufficient to convey future projected storm flows. Additionally, if the tunnels were to become inoperable or partially obstructed (e.g., due to earthquake damage), flows would need to be discharged to another location. If there were available capacity in the Wilmington Drain, secondary effluent could be bypassed into the

Wilmington Drain just north of Lomita Boulevard. If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the JWPCP could overflow and untreated wastewater could enter various water courses, such as the Dominguez Channel and the Los Angeles River. This scenario would be considered "worst case" and would only occur during severe storm events when there is no capacity in the Wilmington Drain. However, discharges of secondary effluent or untreated wastewater to such water courses would be considered a violation of the JWPCP National Pollutant Discharge Elimination System permit and of the CWA.

3.4.1.6 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites and would not rehabilitate the existing ocean outfalls. Therefore, none of the project elements described in Section 3.3 would be constructed under the No-Federal-Action Alternative. However, the program elements for the recommended alternative would be implemented in accordance with CEQA requirements. The program-level elements for this alternative would not be subject to NEPA.

Under the No-Federal-Action Alternative, the Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges and/or sewer overflows to various water courses as described in Section 3.4.1.5.

3.4.2 Alternatives Considered and Withdrawn

The Sanitation Districts performed a comprehensive screening process to develop the program- and project-level alternatives. For a comprehensive discussion of the screening process and the alternatives considered and withdrawn as shown on Figure 3-1 and Figure 3-2, refer to Chapter 6 of the MFP.

3.5 NEPA Scope of Analysis

This section further details the Corps' NEPA scope of analysis first introduced in Section 1.4.2, which established the rationale for limiting the NEPA scope of analysis to the project elements of the Clearwater Program. In particular, this section establishes the rationale for distinguishing direct and indirect impacts under NEPA.

Generally, the Corps' geographic area of responsibility includes all waters of the U.S. (geographic jurisdiction), as well as any additional areas of non-jurisdictional waters or uplands (onshore) where there is sufficient federal control and responsibility to justify, including those areas within the Corps' NEPA scope of analysis. In determining whether there is sufficient federal control and responsibility in non-jurisdictional waters or uplands, the Corps evaluates projects according to the four factors indicated in 33 Code of Federal Regulations (CFR), Part 325, Appendix B, Section 7:

- Whether or not the activity would comprise merely a link in a corridor-type project
- Whether there are aspects of the upland facility in the immediate vicinity of the regulated activity that would affect the location and configuration of the regulated activity

- The extent to which the entire project would fall within the Corps' jurisdiction
- The extent of cumulative federal control and responsibility

In applying the four factors, the project elements of the Clearwater Program consist of a corridor-type project that entails both onshore and offshore construction activities. Offshore construction activities would include regulated activities within the Corps' geographic jurisdiction (i.e., the marine environment). In contrast, construction activities onshore could occur without a permit from the Corps because onshore activities are outside of the Corps' geographic jurisdiction. As a result, most onshore construction activities would not be affected by the location and configuration of the regulated activities with the exception of construction shaft sites located near shore. In such a case, the Corps' NEPA scope of analysis would typically be limited to offshore project elements of the project alternatives. However, according to the description of the No-Federal-Action Alternative (see Section 3.4.1.6), the onshore project elements of all four project alternatives would not be constructed without a permit from the Corps to construct the respective offshore project elements. Therefore, environmental effects of the construction of onshore project elements are essentially products of the Corps' authorization for construction of offshore project elements. Accordingly, there is sufficient federal control and responsibility for environmental effects associated with the onshore project elements of the project alternatives. Based on the application of the four factors and in consideration of the No-Federal-Action Alternative, the Corps' NEPA scope of analysis for the project elements of the Clearwater Program would encompass both offshore and onshore elements of all four project alternatives as depicted on Figure 3-16.

3.5.1 Construction and Operational Impacts

The Corps' regulatory authority under Section 10 of the RHA; Section 404 of the CWA; and Section 103 of the MPRSA entails authorizations for project-related offshore construction activities. Accordingly, the Corps has sufficient federal control and responsibility over project construction activities in waters of the U.S. and adjacent upland areas. Upon completion of construction, the Corps generally would continue to maintain sufficient federal control and responsibility over project operations. However, in comparison to project construction activities, federal control and responsibility over project operations would be relatively limited. Therefore, the Corps would primarily apply permit conditions and required mitigation measures to the construction phase of the project.

Future project maintenance activities may require authorizations from the Corps. The Sanitation Districts would be required to obtain separate authorizations as needed from the Corps for such activities. The Corps would analyze environmental effects associated with future maintenance activities as authorization requests are received and processed.

3.5.2 Direct and Indirect Effects Under NEPA

NEPA regulations at 40 CFR, Part 1508.8 make a distinction between direct and indirect effects. The Standard Operating Procedures for the U.S. Army Corps of Engineers Regulatory Program further refines this distinction as it applies to activities requiring permits from the Corps:

> A direct effect is caused by the activity needing the Corps' permit authorization, which occurs at the same time and place.... Indirect effects are those caused by the activity needing the Corps' permit authorization, but which take place later in time or farther removed in distance.

Based on the requirements, the Corps, in general, considers direct and indirect impacts as those environmental effects over which sufficient federal control and responsibility exist. With respect to the

project component of the Clearwater Program, environmental effects that would be the direct results of construction activities authorized by the Corps within waters of the U.S. (i.e., the marine environment) would be considered direct impacts under NEPA. With respect to the project component of the Clearwater Program, environmental effects associated with construction activities in the uplands undertaken as a result of authorized activities within jurisdictional areas or environmental effects associated with project operations would be considered indirect impacts under NEPA.

3.6 Introduction to Environmental Analysis

As previously discussed in Chapter 1, Chapters 4 through 20 contain a discussion on the potentially significant effects of the recommended plan and its alternatives. Each of these chapters corresponds with a specific resource area. To assist the reader in comparing information about the various environmental issues, each resource chapter is organized in the following manner:

- Environmental setting
- Regulatory setting
- Impact methodology and assumptions
- Thresholds of significance
- Impacts and mitigation measures
- Residual impacts

Significant cumulative impacts for each environmental resource area are summarized in Chapter 21. The recommended plan and its alternatives are compared to the CEQA and NEPA baselines. They are then evaluated relative to each other based on anticipated impacts for each resource area to determine the environmentally preferred and environmentally superior alternative. The CEQA and NEPA baselines and their application to analysis of potential impacts are explained in detail in Chapter 1.

3.6.1 Methodology Used in This Environmental Analysis

In evaluating the potential impacts of the recommended plan and its alternatives, the level of significance is determined by applying the thresholds of significance presented in each resource area. All of the program and project elements were initially evaluated through a Preliminary Screening Analysis (Appendix 1-A) and were designated as no impact, less than significant impact, or potentially significant impact. The environmental analyses in Chapters 4 through 20 include a detailed discussion and final impact determination for all program and project elements that were determined to have a potentially significant impact during preliminary screening. Program and project elements that were deemed to have no impact or a less than significant impact in the Preliminary Screening Analysis are discussed in detail in Appendix 1-A.

3.6.2 Terminology Used in This Environmental Analysis

The following terms are used to describe each impact:

- **No impact.** A designation of no impact is given when no adverse changes in the environment are expected.
- **Less than significant impact.** A less than significant impact is identified when the recommended plan or alternatives would cause no substantial adverse change in the environment (i.e., the impact would not reach the threshold of significance).

- **Significant impact.** A significant (but mitigable or avoidable) impact is identified when the recommended plan or alternatives would create a substantial or potentially substantial adverse change in any of the physical conditions within the affected resource area. Such an impact would exceed the applicable significance threshold established by CEQA and NEPA, but would be reduced to a less than significant level by application of one or more mitigation measures.
- **Significant unavoidable impact.** A significant unavoidable impact is identified when an impact that would cause a substantial adverse effect on the environment could not be reduced to a less than significant level through any feasible mitigation measure(s).
- **Mitigation.** Mitigation refers to measures that would be implemented to avoid or lessen potentially significant impacts. Mitigation includes:
  - Avoiding the impact altogether by not taking a certain action or parts of an action
  - Minimizing the impact by limiting the degree or magnitude of the action and its implementation
  - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
  - Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
  - Compensating for the impact by replacing or providing substitute resources or environments

  The mitigation measures would be proposed as a condition of plan approval and would be monitored to ensure compliance and implementation.
- **Residual impacts.** Residual impacts are the level of impact after the implementation of mitigation measures.

Chapter 4
AESTHETIC RESOURCES

4.1 Introduction

This chapter describes the existing conditions and regulations applicable to aesthetic resources, discusses potential impacts on aesthetic resources that would result from the Clearwater Program, determines the significance of impacts, and provides mitigation measures, where feasible, that would reduce these impacts.

Issues related to aesthetic resources include the effect of project elements on the visual character of the area and potential adverse changes in daytime and nighttime views. Project compliance with adopted polices to protect valued views and issues related to glare and shadows are also discussed.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the aesthetic resources impact analysis for each program element is summarized by alternative in Table 4-1. As shown in the table, program-level impacts on visual quality are discussed in the Preliminary Screening Analysis (Appendix 1-A) and, therefore, are not included in this chapter.

Table 4-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	-
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	-
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 4-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	-
Biosolids Management	X	X	X	X	X	N/A	O	-
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 4-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 4.4.7 for a discussion of the No-Project Alternative.
[b] See Section 4.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the aesthetics resources impact analysis for each project element is summarized by alternative in Table 4-2.

Table 4-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	-
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	-
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	-
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	-
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	-
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	-
Figueroa/ Western to Royal Palms (onshore)				X	N/A	N/A	C,O	-
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C,O
JWPCP West			X	X	N/A	N/A	C,O	C,O
TraPac	X	X			N/A	N/A	C,O	-
LAXT	X	X			N/A	N/A	C,O	-

Table 4-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Southwest Marine	X	X			N/A	N/A	C,O	-
Angels Gate			X		N/A	N/A	C,O	C,O
Royal Palms				X	N/A	N/A	C,O	C,O
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	C,O	C
PV Shelf		X	X		N/A	N/A	C,O	C
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	C

[a] See Section 4.4.7 for a discussion of the No-Project Alternative.
[b] See Section 4.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

4.1.1 Concepts and Terminology

Identifying an area's visual resources and conditions involves three steps:

- Objectively identify the visual features (visual resources) of the landscape
- Assess the character and quality of those resources relative to the region's overall visual character
- Determine the importance of visual resources views (i.e., viewer sensitivity)

The aesthetic value of an area is a measure of its visual character and quality, combined with the viewer response to the area (FHWA 1988:26–27, 37–43, 63–72). Scenic quality can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area (BLM 1980:2–3). Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers, and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These terms and criteria are described in detail in the following section.

4.1.1.1 Visual Character

Natural and artificial landscape features contribute to the visual character of an area or view. Visual character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlements and development, including roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary significantly seasonally, even hourly, as weather, light, shadow, and elements that compose the viewshed change. The basic components used to describe visual character for most visual assessments are the elements of form, line, color, and texture of the landscape features (USFS 1995:28-34, 1-2–1-15; FHWA 1988:37–43). The appearance of the landscape is described in terms of the dominance of each of these components.

4.1.1.2 Visual Quality

Visual quality is evaluated using the well-established approach to visual analysis adopted by the Federal Highway Administration (FHWA), employing the concepts of vividness, intactness, and unity (FHWA 1988:46–59; Jones et. al. 1975:682−713), which are described below.

- Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.
- Intactness is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes, and in natural settings.
- Unity is the visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual components in the landscape.

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by its visual sensitivity. High-quality views are highly vivid and relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity.

4.1.1.3 Visual Exposure and Sensitivity

The measure of the quality of a view must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency and duration of views, number of viewers, and type and expectations of individuals and viewer groups.

The importance of a view is related in part to the position of the viewer in relation to the resource. Therefore, visibility and visual dominance of landscape elements depend on their placement within the viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (FHWA 1988:26–27). To identify the importance of views of a resource, a viewshed must be broken into distance zones of foreground, middleground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance. Although distance zones in a viewshed may vary between different geographic regions or types of terrain, the standard foreground zone is 0.25–0.5 mile from the viewer, the middleground zone extends from the foreground zone to 3–5 miles from the viewer, and the background zone extends from the middleground zone to infinity (Jones et al. 1975:688).

Visual sensitivity depends on the number and type of viewers, and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is generally higher for views seen by people who are driving for pleasure; people engaging in recreational activities, such as hiking, biking, or camping; and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or while at work (USFS 1995:3-3–3-13; FHWA 1988:63–72; U.S. Soil Conservation Service 1978:3, 9, 12). Commuters and non-recreational travelers have generally fleeting views and tend to focus on traffic, not on surrounding scenery. Therefore, they are generally considered to have low visual sensitivity. Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes. Therefore, they are generally considered to have high visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are usually assessed as having high visual sensitivity.

Judgments of visual quality and viewer response must be made based on the regional frame of reference (U.S. Soil Conservation Service 1978). The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality and sensitivity in each setting. For example, a small hill may be a significant visual element in a flat landscape but have very little significance in mountainous terrain.

4.2 Environmental Setting

4.2.1 Regional Setting

The visual character of the Joint Outfall System (JOS) service area provides a context and frame of reference for assessing the visual quality of the program and project sites. Information regarding the regional setting is taken in part from the Program Environmental Impact Report for the Joint Outfall System 2010 Master Facilities Plan (Jones & Stokes 1994:15-1–15-8), which is incorporated herein by reference.

The region is a broad coastal plain bordered by the partially forested San Gabriel Mountains to the north, the Santa Ana Mountains to the east, and the Pacific Ocean to the south and west. Views of the San Gabriel Mountains to the north can be dramatic and vivid from the coastal plain, especially in winter and after storms when the mountains are snow-capped and the air is clear. However, poor air quality due to smog, fog, and haze often limits the extent and quality of views throughout the region. The area is developed and highly urbanized with pockets of open space in the form of public parks and spaces. Natural landscape features are generally subordinate to the area's urban character. Conversely, the dynamic coastline is a highly valued visual resource that also defines the regional visual character. The industrialized, active Port of Los Angeles provides visual testament to the region’s current and historical maritime activities.

Several important rivers and tributaries flow generally south from the mountains and across the coastal plain. Most rivers, streams, and drainages in the urbanized areas are contained in concrete-lined channels. Streamside or other naturally occurring vegetation is scarce. Where it does exist, it is an important visual element in the regional landscape. Coastal salt marshes occur in small areas along the coast and are visually important because of their high visibility and scarcity in the region. Most existing vegetation in the coastal plain is urban landscaping and street trees.

Because the area is heavily urbanized, the unity and vividness of urban form and elements are important criteria for defining visual character and quality. However, throughout much of the region, the extensive urbanization also creates a generally low degree of intactness. Many diverse land uses are mixed throughout the region, providing little design cohesiveness and low unity of design elements. Numerous high-voltage power lines and freeways are highly visible linear elements in the generally level and open coastal plain. These elements cross the landscape and reduce any strong sense of design order or cohesiveness in the regional landscape. Freeways are dominant visual elements in the region and also provide one of the most important vantage points for viewing the area for both residents and visitors. Other streets and roads are important viewing locations as well.

4.2.2 Program Setting

This section does not include a discussion of program elements, which would have no impacts or less than significant impacts on aesthetic resources, as determined in the Preliminary Screening Analysis (see Appendix 1-A). However, although program elements at the JWPCP were dismissed from further

analysis during preliminary screening, the JWPCP provides the aesthetic context for the JWPCP East and JWPCP West shaft sites and, therefore, it is included in the following discussion.

Joint Water Pollution Control Plant

The JWPCP is located in an area containing industrial, commercial, and residential land uses. Portions of the plant are visible from the surrounding streets and neighborhoods. The heavily traveled Interstate (I-) 110 runs north-south adjacent to the site's west side. Much of the site is highly visible from the elevated I-110, especially for northbound travelers. The plant also is visible from heavily traveled surface streets (e.g., Sepulveda Boulevard, Lomita Boulevard, and Figueroa Street) and other nearby local roadways. A portion of the southeast side of the site is visible from a residential neighborhood south of Lomita Boulevard.

Intactness, vividness, and unity for the area are low because of the diverse forms and structures in the area. Little substantial vegetation exists around or on the site. Some sparse vegetation provides screening along a concrete channel on the site's west side between the JWPCP and I-110. This vegetation softens the industrial character of the area but is not extensive enough to substantially improve the intactness, vividness, or unity of views of the plant and its surroundings. The Bixby Marshland, a small wetland with a few large riparian trees and tall shrubs, is located along the northwest side of the site. The marshland is visible from several locations to the west, including I-110. The Wilmington Athletic Complex is located in the southeast corner of the site, and includes a large open space recreational area. The Burlington Northern Santa Fe railroad line runs east–west through the site and is currently used for freight purposes; it carries no passengers.

The JWPCP site itself contains numerous tanks and industrial structures. The structures vary greatly in form and are generally less than 40 feet in height. They are painted mostly in subdued earth tones, primarily tan. The JWPCP is moderately unified in design by its generally consistent color scheme and industrial character. Light-colored and metallic materials used throughout the plant site create glare. Night lighting for security and operations also creates nighttime light and glare that is visible from the nearby travel routes and the residential neighborhood to the southeast. The perimeter of the plant consists mostly of ornamental block walls, wrought iron fencing, trees, and/or landscaped areas that provide partial screening from visual receptors. In several portions of the JWPCP site, flowers and nursery plants are being raised as part of commercial operations. Although colorful, these areas are not vivid because of the appurtenant structures and equipment present.

4.2.3 Project Setting

This section includes a discussion of existing conditions at sites where the project could occur. Visual character is inventoried and documented from key observation points (KOPs), which represent key views of the project site for individuals and viewer groups. The locations of these KOPs and associated views are graphically displayed in Figures 4-1 through 4-4. Photorealistic simulations are also provided in Figures 4-1 through 4-4 and are used as a tool to evaluate impacts on aesthetics that would occur with the project in place, as discussed in Section 4.4. All simulations were prepared by the Sanitation Districts of Los Angeles County (Sanitation Districts) and are compiled at the end of this chapter.

4.2.3.1 Tunnel Alignment

The onshore tunnel alignments are located underground and, therefore, would not be visible at ground level. The aboveground visual setting along the tunnel alignments is the same as that for the regional setting.

4.2.3.2 Shaft Site

During preliminary screening, the Trans Pacific Container Service Corporation (TraPac), Los Angeles Export Terminal (LAXT), and Southwest Marine shaft sites were determined to have a less than significant impact on visual quality. Discussion of these project elements is located in the Preliminary Screening Analysis (Appendix 1-A).

JWPCP East

The JWPCP East shaft site is located in an area containing industrial, residential, and commercial land uses. The site is bound to the north by a railway and other JWPCP facilities. KOP and simulated KOP locations for the JWPCP East shaft site are shown on Figure 4-1. Main Street follows the eastern edge of the site and is lined with industrial warehouses. Commercial development is located northeast and southwest of the Main Street and Lomita Boulevard intersection. Lomita Boulevard follows the southern edge of the site and is lined with residential development. The western edge of the site is bound by other JWPCP facilities. Most views of the site are from Main Street and Lomita Boulevard. The warehouse facilities located on the east side of Main Street are oriented with their entrances in a north–south direction, and views of the shaft site are not readily available. Views of the southeastern portion of the shaft site are available from the residential and commercial areas looking northwest from the Main Street and Lomita Boulevard intersection (Figure 4-1a, KOP 1). Residential viewers looking north along Lomita Boulevard have the most direct, extended views of the southernmost portion of the shaft site (Figure 4-1a, KOP 2; Figure 4-1b, KOP 3). An earth-toned block wall and black aluminum security fence that runs along the eastern and southern edges of the shaft site limits ground-level views to the interior. Landscaping along the fence provides an attractive visual contrast and serves to soften and reduce the vertical appearance of the wall.

As part of the larger JWPCP complex, as described is Section 4.2.2, vividness and unity for the area are low because of the diverse forms and structures in the area. Intactness of the area is generally moderate in the immediate vicinity of the site because land uses are somewhat cohesive, consisting of the local roadways, residences, and industrial and commercial areas. The JWPCP East shaft site does not contain any buildings. Utilities and infrastructure are common visual elements. Roadways and industrial, commercial, and residential areas all have night lighting for security and safety purposes that result in nighttime light and glare.

JWPCP West

The JWPCP West shaft site is located in an area containing industrial, residential, and recreational land uses. KOP and simulated KOP locations for the JWPCP West shaft site are shown on Figure 4-2. The site is bound to the north by Lomita Boulevard and other JWPCP facilities north of the roadway. To the east, the site is bound by Figueroa Street, the Wilmington Athletic Complex, and the Wilmington Boys and Girls Club. The JWPCP West shaft site does not contain any buildings. Oil wells located within the shaft site boundary are visible above the landscape buffer from within the Wilmington Athletic Complex (Figure 4-2a, KOP 1). The Wilmington Athletic Complex is fenced and landscaped with tall vegetation on both its western and eastern perimeters, obstructing views into the shaft site from the residential strip along Eudora Avenue (Figure 4-2a, KOP 2). The western edge of the site is bound by I-110, which is elevated as it passes by the site and affords travelers on I-110 views into the site (Figure 4-2a, KOP 3). These views are fleeting at normal highway speeds but are of longer duration during peak traffic periods. The residential development south of the Wilmington Boys and Girls Club has very limited views of the southern end of the shaft site. A black, decorative wrought-iron fence surrounds the northern, eastern, and southern edges of the shaft site, and a landscape buffer is planted along Figueroa Street to limit views to the interior of the site (Figure 4-2b, KOP 4).

As part of the larger JWPCP complex, as described is Section 4.2.2, vividness and unity for the area are low because of the diverse forms and structures in the area. Intactness of the area is generally moderate in the immediate vicinity of the site because land uses are somewhat cohesive, consisting of the local roadways, residences, and industrial and recreational areas. Utilities and infrastructure are common visual elements. Roadways and industrial and residential areas all have night lighting for security and safety purposes that create nighttime light and glare. However, the Wilmington Athletic Complex is not typically used for nighttime events, as evidenced by its lack of permanent lighting.

Angels Gate

The Angels Gate shaft site is located south of Angels Gate Park, at the base of the hill where the Korean Bell of Friendship is housed, and southeast of Angels Gate Continuation High School (which is also the location of the future South Region High School No. 15). The site is north of Point Fermin Park and West Paseo Del Mar/Shepard Street. KOP and simulated KOP locations for Angels Gate are shown on Figure 4-3. South Gaffey Street and a residential development border the site to the east. The western and southern perimeter is bound by West Paseo Del Mar/Shepard Street and the northwest corner of Point Fermin Park. The Pacific Ocean is prominently visible to the west. The shaft site location is highly visible to all viewer groups in the area. Recreationists have ground-level views from within the Point Fermin Park coastal trail (Figure 4-3a, KOP 1) or local sidewalks and bike lanes along West Paseo Del Mar/Shepard Street. Residents southeast and east of the site have direct, unobstructed views of the shaft site, as do travelers using adjacent roadways and sidewalks (Figure 4-3a, KOP 2 and Figure 4-3b, KOP 3, respectively). Recreationists have elevated views into the site from the Angels Gate Park hillside, south of the Korean Bell of Friendship (Figure 4-3e, KOP 4).

Vividness, intactness, and unity for the area are moderate because nearby residential land uses are complemented by landscaped parks, open space, and the coastline, which create an attractive viewshed and form a cohesive coastal community setting. Roadways, parks, parking areas, and residential areas all have night lighting for security and safety purposes that create nighttime light and glare. Lights located along the coast reflect off the water's surface, contributing to nighttime glare, but this is often perceived as an attractive visual element.

Royal Palms

The Royal Palms shaft site is located within Royal Palms Beach, just west of White Point Park and northwest of White Point Beach. KOP and simulated KOP locations for Royal Palms are shown on Figure 4-4. The site is situated at the base of the bluff, the top of which is lined with luxury homes along West Paseo Del Mar that have views looking down on the shaft site. Recreationists using White Point Park have views looking down on the shaft site from the bluff above (Figure 4-4a, KOP 1). Roadway users on West Paseo Del Mar do not have views of the shaft site. Recreationists using Royal Palms Beach have ground-level views of the shaft site looking southeast and northwest from the parking lots, promenade and restroom area, the beach, and water (Figure 4-4d, KOP 2 and Figure 4-4g, KOP 3, respectively).

Vividness, intactness, and unity for the area are high because nearby residential land uses, landscaped parks, and open spaces do not detract from the dynamic visual presence of the ocean, rocky and sandy shorelines, and rising bluffs. These elements comprise an attractive viewshed and form a cohesive coastal setting that changes seasonally, with variations in the climate, and with changes brought about by weather fronts, creating drastically different vistas. Roadways, parks, parking areas, and residential areas all have night lighting for security and safety purposes that create nighttime light and glare. Lights located along the coast reflect off the water's surface, contributing to nighttime glare, but this is often perceived as an attractive visual element.

4.2.3.3 Riser/Diffuser Areas

The riser and diffuser areas for the San Pedro Shelf (SP Shelf) and Palos Verdes Shelf (PV Shelf), and the existing ocean outfalls are described herein. The discussion includes a description of the location of KOPs and the associated KOP photographs. Additionally, KOP simulations are provided at certain KOPs as a tool to evaluate project impacts, which are discussed in Section 4.4.

San Pedro Shelf

The SP Shelf riser and diffuser would be located on the ocean floor, over 7.5 miles off the coast at a depth of approximately 200 feet and, therefore, would not be visible during operation. There are, however, coastal views of the water from which construction would occur above the riser and diffuser area. These coastal views can change drastically with the seasons and are high in vividness, intactness, and unity because of the dynamic visual presence of the ocean, rocky and sandy shorelines, and rising bluffs. The ocean surface above the riser and diffuser area can be seen from land- and water-based vantage points. The KOP location for the SP Shelf riser and diffuser is shown on Figure 4-3 (same as Angels Gate shaft site). Land-based views are available to residents, recreationists, roadway travelers, and workers (in both commercial and industrial settings). Ocean views are available to commercial and recreational boaters using motorboats, sailboats, kayaks, and canoes; swimmers; surfers; wind surfers; jet skiers; and scuba divers. Ocean views are most accessible from Angels Gate Park (Figure 4-3h, KOP 5), Lookout Point, Point Fermin Park, the southern extents of the Port of Los Angeles, and from residences and roadways in the general area. Because of distance and typical atmospheric conditions, boat activity and the water above the SP Shelf is visible to a lesser degree from Royal Palms Beach, White Point Park, and White Point Beach.

Palos Verdes Shelf

The PV Shelf riser and diffuser would be located on the ocean floor approximately 2 miles off the coast at a depth of approximately 175 feet and, therefore, would not be visible during operation. There are, however, coastal views of the water from which construction would occur above the riser and diffuser area. These coastal views can change drastically with the seasons and are high in vividness, intactness, and unity because of the dynamic visual presence of the ocean, rocky and sandy shorelines, and rising bluffs. The area above the riser and diffuser area can be seen from land- and water-based vantage points. KOP and simulated KOP locations for the PV Shelf riser and diffuser are shown on Figure 4-3 (same as Angels Gate shaft site). Land-based views are available to residents, recreationists, roadway travelers, and workers (in both commercial and industrial settings). Ocean views are available to commercial and recreational boaters using motorboats, sailboats, kayaks, and canoes; swimmers; surfers; wind surfers; jet skiers; and scuba divers. Views are most accessible near Angels Gate and Point Fermin Parks and from residences and roadways in the general area (Figure 4-3i, KOP 6). Because of distance and typical atmospheric conditions, the PV Shelf is visible to a lesser degree from Royal Palms Beach, White Point Park, and White Point Beach.

Existing Ocean Outfalls

The existing ocean outfalls connect to a manifold structure at Royal Palms Beach and extend approximately 2 miles into the Pacific Ocean to a depth of approximately 200 feet on the PV Shelf. They are located on the ocean floor and are not visible from the ocean surface or from land. There are, however, coastal views of the water above the existing ocean outfalls where rehabilitation would occur. These coastal views can change drastically with the seasons and are high in vividness, intactness, and unity because of the dynamic visual presence of the ocean, rocky and sandy shorelines, and rising bluffs. The ocean surface above the existing ocean outfalls can be seen from land- and water-based vantage points. Land-based views are available to residents, recreationists, roadway travelers, and workers (in both commercial and industrial settings). KOP and simulated KOP locations for the existing ocean

outfalls are shown on Figure 4-4 (same as Royal Palms shaft site). Ocean views are available to commercial and recreational boaters using motorboats, sailboats, kayaks, and canoes; swimmers; surfers; wind surfers; jet skiers; and scuba divers. Views of the existing ocean outfalls area are most accessible from White Point Park (Figure 4-4g, KOP 4), Royal Palms Beach, Harbor Walkway, White Point Beach, residences above the bluff (Figure 4-4h, KOP 5), and roadways in the general area. Because of distance and typical atmospheric conditions, the ocean surface above the existing ocean outfalls is visible to a much lesser degree from Angels Gate Park.

4.2.4 Existing Viewer Groups and Viewer Responses

4.2.4.1 Residents

The cities of Carson and Los Angeles, including the communities of Wilmington and San Pedro, would be affected by construction at the shaft sites, work within the riser and diffuser areas, and rehabilitation of the existing ocean outfalls. The residents in areas surrounding the inland shaft sites would be moderately sensitive to changes in views of their environment. These views are in areas that are highly developed and that experience construction activities through development or roadway improvements on a fairly regular basis. Views would be limited to residences fronting the shaft sites or travel routes and, most often, would not extend to residences on nearby streets.

Portions of the communities of Wilmington and San Pedro have scenic views of San Pedro Bay and the Pacific Ocean, and would potentially have above-water views of the riser and diffuser areas. These views consist of the ocean and bay outlines, opposite landforms, development massings, larger vegetation massings, and rolling hills. However, distance often makes finer details indistinguishable from the various vantage points. Given the distance from the site, residents are considered to have low sensitivity to visual changes resulting from the project.

There are very few residences on parcels of land immediately along the coastline (primarily along West Paseo Del Mar), but they are physically closer to the features that give the coastline its astounding scenic quality. Residents have chosen to live here for these scenic qualities, for the resources available along the coastline, such as wildlife, and for opportunities for land and water recreation. Residents along the coastline are likely to have high sensitivity to visual changes because of their proximity to coastal features, appreciation of the surrounding natural environment and visual experience, and high sense of ownership over such experiences and features.

4.2.4.2 Businesses

Businesses in the project area offer commercial, industrial, and recreational services. Commercial businesses and operations generally serve residents and workers in their immediate vicinity. Industrial businesses and operations tend to be service-based, and manufacture, supply, ship, and distribute goods mostly to commercial entities for public use. Sensitivity of commercial and industrial business viewers would be low because employees of these businesses are likely to be highly occupied with their work activities. In addition, these viewers are likely accustomed to the traffic and activities associated with industry and construction. Given their limited viewing times, their focus on tasks at hand, and the current level of construction within their viewsheds, these viewers are considered to have low sensitivity to changes in views.

Recreational businesses and operations generally serve specific, focused groups. Their livelihoods tend to rely on the land- or water-based recreational opportunities in the area. These opportunities are often closely tied not only to the activity at hand but also to the visual experience. Therefore, employees and

customers are more likely to be affected by changes in the visual environment and would, therefore, have high sensitivity to changes in views.

4.2.4.3 Roadway Users

One of the largest viewer groups affected by the project would be travelers along local roadways. Many of these roadways serve as commercial and commuter routes, with truck drivers and commuters being the most frequent viewers. Speeds vary by route and peak and off-peak hours. During commute hours, single views could be quite long. However, viewers who frequently travel high-traffic roadways generally possess low visual sensitivity to their surroundings. The passing landscape becomes familiar, and their attention is typically focused elsewhere. At standard roadway speeds during off-peak hours, views are short, and travelers are fleetingly aware of surrounding traffic, road signs, the automobile's interior, and other visual features of the environment. Roadway travelers also have low sensitivity because they need to concentrate on exiting/merging from one roadway to another. Other, smaller local roadways may be traveled more for their scenic qualities and coastal views. Travelers on such roadways are likely to have moderate sensitivity because they seek out such routes for their aesthetic viewsheds.

4.2.4.4 Recreationists

People involved in recreational activities view the project area from lands along the coast, public parks, surrounding waterways, and public roadways. The primary inland recreational uses in the project areas are sporting activities and passive recreational uses in local parks. The primary coastal recreational uses in the project areas are boating (motorboats, sailboats, kayaks, and canoes), swimming, surfing, wind surfing, jet skiing, scuba diving, fishing, hiking, and wildlife and nature viewing. Other recreational uses in the project area are running, jogging, and bicycling along local public roads. Waterway users have unique views based on their location in the landscape, and are accustomed to variations in the level of industrial, commercial, and recreational activities in the vicinity. Most recreationists in the area are moving through the landscape as opposed to staying in one area for extended periods of time. Beach and park users (e.g., picnickers) are the exceptions, as they often stay in one location longer than other recreationists. Their views may differ based on their location, and their attention is often focused both on their immediate activities and the surrounding landscape. Users of parks or public use areas along the coast in the project area are likely to seek out sweeping views of the bay, ocean, and natural areas from trails, park roadways, and other access points.

Recreationists who frequent the project area and surrounding vicinity likely are accustomed to seeing some level of maintenance activities (including the presence of heavy equipment) associated with roadway maintenance, development, infrastructure, and shipping. Generally, those participating in recreational activities in the project area are more likely to highly value the natural environment, appreciate the visual experience, and be sensitive to changes in views. Because of their appreciation of the natural landscape, combined with the importance and value of the recreational areas, this viewer group has high sensitivity to changes in views.

4.3 Regulatory Setting

4.3.1 Federal

4.3.1.1 California Coastal National Monument

The California Coastal National Monument (CCNM), which is managed by the United States (U.S.) Bureau of Land Management (BLM), was established on January 11, 2000, under presidential proclamation stating:

> The islands, rocks, and pinnacles of the California Coastal National Monument overwhelm the viewer, as white-capped waves crash into the vertical cliffs or deeply crevassed surge channels and frothy water empties back into the ocean. Amidst that beauty lies irreplaceable scientific values vital to protecting the fragile ecosystems of the California coastline. At land's end, the islands, rocks, exposed reefs, and pinnacles off the coast above mean high tide provide havens for significant populations of sea mammals and birds. They are part of a narrow and important flight lane in the Pacific Flyway, providing essential habitat for feeding, perching, nesting, and shelter. (BLM 2000.)

The legislation protects "islands, rocks, exposed reefs, and pinnacles above mean high tide within 12 nautical miles of the shoreline of the State of California" for the entire 840 miles of California's Pacific coastline (BLM 2000). The coastline affected by the project is part of the CCNM on the Palos Verdes Peninsula that includes Royal Palms Beach and Point Fermin Park as points of interest (BLM 2010).

4.3.1.2 California Coastal National Monument Resource Management Plan

The CCNM Resource Management Plan only applies to BLM lands within the CCNM (BLM 2005:2–15). The sections that apply to visual resources are listed below.

Allowable Uses

AU-VRM-1: On-Monument Developments. Any new site developments on BLM lands will be located and designed so that they do not detract from coastal vistas. New facilities will be constructed so that no or minimal impacts occur to the immediate coastal viewshed.

AU-VRM-2: Aids-to-Navigation. In areas where coastal rocks present navigation hazards, any analysis of safety/navigation aids will consider opportunities for placing aids in adjoining waters or land. Only where it is determined that these aids will not be effective elsewhere, or will cause greater impacts on the coastal landscape, will they be considered for on-monument placement. Where on-monument (i.e., on-rock) navigation aids are determined to be the only reasonable solution, efforts will be made to balance the need to provide for navigational safety while minimizing visual impacts.

Operating Framework

FR-VRM-1: Agency Coordination. Work with county governments, the California Coastal Commission, the [U.S. Coast Guard] USCG, and other agencies with management jurisdiction to ensure that coastal developments do not detract from the scenic integrity of the area.

FR-VRM-2: Mainland Facilities. Locate and design any new CCNM-related facilities on the mainland (for instance, on BLM partner lands) so that these facilities do not detract from coastal vistas. New facilities will be constructed so that no or minimal impacts occur to the immediate coastal viewshed.

4.3.1.3 Coastal Zone Management Act of 1972

Sections of the Coastal Zone Management Act of 1972 that are most relevant to the project are highlighted below.

Section 302 (U.S. Government Code [USC], Title 16, Section 1451). (Congressional findings) states:

> (b) The coastal zone is rich in a variety of natural, commercial, recreational, ecological, industrial, and esthetic resources of immediate and potential value to the present and future well-being of the Nation and that (e) important ecological, cultural, historic, and esthetic values in the coastal zone which are essential to the well-being of all citizens are being irretrievably damaged or lost.

Section 303 (16 USC 1452). (Congressional declaration of policy) declares:

> It is the national policy (2) to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values as well as the needs for compatible economic development, which programs should at least provide for (F) assistance in the redevelopment of deteriorating urban waterfronts and ports, and sensitive preservation and restoration of historic, cultural, and esthetic coastal features.

Section 306 (16 USC 1455). (Administrative grants) states:

> Management programs for administrative grants submitted by coastal states are required to have (2)(G) a definition of the term *beach* and a planning process for the protection of, and access to, public beaches and other public coastal areas of environmental, recreational, historical, esthetic, ecological, or cultural value.

Section 306 (16 USC 1455). (Administrative grants) further states:

> (9) The management program includes procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreational, ecological, historical, or esthetic values.

4.3.2 State

4.3.2.1 Scenic Roadways

No roadways that would be affected by the project are designated in state plans as scenic roadways or corridors worthy of protection to maintain and enhance scenic viewsheds.

4.3.2.2 California Ocean Plan

Policies from the California Ocean Plan (SWRCB 2005:3, 5) that apply to visual resources are described below.

Beneficial Uses

(A) The beneficial uses of the ocean waters of the State that shall be protected include industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance; rare and endangered species; marine habitat; fish migration; fish spawning and shellfish harvesting.

Water Quality Objectives

(C) Physical Characteristics, (2) The discharge of waste shall not cause aesthetically undesirable discoloration of the ocean surface.

4.3.2.3 California Coastal Act

The California Coastal Act includes the following policy that applies to visual resources.

> **Chapter 3. Coastal Resources Planning and Management Policies, Article 6. Development: Section 30251 – Scenic and Visual Qualities.** The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas.

4.3.3 Regional

4.3.3.1 Water Quality Control Plan, Los Angeles Region

Uses identified as beneficial by the Water Quality Control Plan for the Los Angeles Region (California CRWQCB 1994:2-2, 5-5) are discussed below.

Water Contact Recreation (REC 1)

See Chapter 13.

Non-Contact Water Recreation (REC 2)

Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

4.3.4 Local

4.3.4.1 City of Carson General Plan

The City of Carson General Plan (City of Carson 2004:LU25–LU36) identifies the area of the JWPCP as "heavy industrial." Policies on visual resources applicable to the project are listed below.

Land Use Element

Policy LU-6.8. Manage truck-intensive uses.

Policy LU-7.2. Locate truck intensive uses in areas where the location and circulation pattern will provide minimal impacts on residential and commercial uses.

Policy LU-7.3. Promote the use of buffers between more intensive industrial uses and residential uses.

Policy LU-9.5. Develop design standards to address permanent and effective screening of areas in transition and heavy industrial uses such as outdoor storage yards, pallet yards, salvage yards, auto dismantling yards, and similar uses.

Policy LU-12.5. Improve City appearance by requiring landscaping to screen, buffer and unify new and existing development. Mandate continued upkeep of landscaped areas.

4.3.4.2 City of Los Angeles General Plan

The City of Los Angeles General Plan Land Use Element consists of the San Pedro (City of Los Angeles 1999a) and Wilmington-Harbor City (City of Los Angeles 1999b) Community Plans that occur within the JOS service area.

San Pedro Community Plan

Policies from the San Pedro Community Plan (City of Los Angeles 1999a:III-7, III-14, III-17-23, V-6-8) that apply to visual resources are discussed below.

Residential

Policy 1-9.1. The preservation of existing scenic views from surrounding residential uses, public streets and facilities, or designated scenic view sites be a major consideration in the approval of zone changes, conditional use permits, variances, divisions of land and other discretionary permits.

Industrial

Policies 3-3.1. Require urban design techniques, such as appropriate building orientation and scale, landscaping, buffering and increased setbacks in the development of new industrial properties to improve land use compatibility with adjacent uses and to enhance the physical environment.

Open Space

The San Pedro Community Plan defines open space as:

> land that is essentially free of structures and buildings and/or is natural in character and which functions in one or more of the following ways:

1. Recreational and educational opportunities.
2. Scenic, cultural, and historic values.
3. Public health and safety.
4. Preservation and creation of community identity.
5. Rights-of-way for utilities and transportation facilities.
6. Preservation of natural resources or ecologically important areas.
7. Preservation of physical resources including ridge protection.

Policy 5-1.1. Encourage the retention of passive and visual open space that provides a balance to the urban development of the community.

Policy 5-1.2. Protect significant environmental resources from environmental hazards.

Policy 5-1.8. Coastal areas containing ecological or scenic resources be preserved and protected within State reserves, preserves, parks, or natural wildlife refuges.

San Pedro Local Coastal Program Specific Plan

Policy 6-2.1. That the scenic and visual qualities of San Pedro be protected as a resource of Community as well as regional importance, with permitted development sited and designed to: protect views to and along the ocean, harbor, and scenic coastal areas; minimize the alteration of natural landform; be visually compatible with the character of the surrounding area; and prevent the blockage of existing views for designated public scenic view areas and Scenic Highways.

Policies 6-3.1 and 6-5.1. That existing coastal-oriented recreational facilities be maintained, developed, and expanded where needed to provide local as well as regional access to and enjoyment of San Pedro's unique coastal resources.

Policy 6-6.1. That visual access to coastal views be provided by means of appropriately located scenic overlooks, turnouts, view spots and other areas for limited vehicular parking, especially along designated Scenic Highways and Bikeways. Turn-out and view site areas from Paso Del Mar shall provide unobstructed views of the ocean. All development seaward of the turn-out and viewsite areas of Paseo Del Mar and Shepard Street shall be sited, designed and constructed so that public views to and along the ocean are protected to the maximum extent feasible. All development in this area, including public recreation and public works, shall be subordinate to their setting and minimize in height and bulk to the maximum extent feasible to accomplish view protection. Until a "Corridor Plan" is prepared for Scenic Highway, any development adjacent to a Scenic Highway shall protect public views to the ocean to the maximum extent feasible, be adequately landscaped to soften the visual impact of the development, and, where appropriate, provide hiking or biking trails, a turnout, vista points and other complementary facilities.

Policy 6-6.2. The Osgood/Farley Battery site, Lookout Point site, and the Korean Bell site shall be designated as public view sites and any development that obstructs views from these sites shall be prohibited.

Urban Design – Industrial

Structures. The purpose is to create attractive buffers along street frontages of industrial sites, and to serve such practical purposes as security, sound attenuation, the separation of functional areas, and the screening of unsightly nuisances, by:

1. Designing the site and building(s) to convey visual interest and to be visually compatible with adjacent uses.
2. Treating large expanses of blank walls and tilt-up concrete walls visible from the public right-of-way with contrasting complementary colors, building plane variation, murals, planters and/or other landscape elements to create visual interest.
3. Screening of mechanical and electrical equipment from public view.
4. Screening of all rooftop equipment and building appurtenances from public view.
5. Requiring the enclosure of trash areas for all projects.
6. Screening of open storage areas from public view.
7. Requiring freestanding walls to use articulations, surface perforations or other elements, and to include plantings of vines or tall shrubs or trees on exterior faces, to relieve long monotonous expanses and mitigate graffiti.
8. Using landscaping effectively to screen parking and loading areas from roadways, as a surface treatment adjacent to building walls, and to screen from public view storage areas, trash containers and utility equipment.

Lighting. Directing exterior lighting onto the project site and locating flood lighting so as not to impact any surrounding residential uses.

Design for Industrial/Residential Interface Areas. In order to mitigate potential negative impacts generated by industrial uses when they are located adjacent to residentially zoned neighborhood, new development of industrial uses shall incorporate the following design guidelines:

Loading Areas:

1. New development of industrial uses located across a local or collector street from a residentially zoned area shall be designed in such a manner that truck loading/unloading is restricted to the rear portion of the lot, and/or separated from the street by the structure housing the industrial use.
2. New development adjacent (abutting) residentially zoned areas shall locate facilities for loading and unloading or open storage of material and finished products on the project site and/or street frontage furthest from the residential development.

Walls/Landscaping:

1. Where vehicle parking, loading, or open storage for a new industrial development is located within 50 feet of a public street which separates the industrial and residential uses, a minimum 3 ½ - foot high solid decorative masonry wall shall be provided in a front yard, or a minimum 5-foot, 9-inch to 8-foot solid decorative masonry wall in a side or rear yard. A minimum 5-foot landscaped setback buffer with an installed automatic sprinkler system shall be located in front of said wall, along the street frontage.

2. New industrial development located directly across a local or collect or street from a residential neighborhood shall provide a minimum 5-foot landscaped setback along any portion of the frontage, not required for driveways, facing the residential use. Said landscaping shall contain a minimum of one 24-inch box tree (with a minimum trunk diameter of two inches, a height of eight feet at the time of planting, and with an installed automatic sprinkler system) for every 20 feet of street frontage.
3. On any other interior property line that separates an industrial use from an abutting residential zone, a minimum 5-foot, 9-inch to 8-foot solid decorative masonry wall shall be provided.

Architectural Guidelines:

1. New industrial development located directly across a local or collector street, or with a lot line adjoining a residentially zoned area, shall have outdoor, on-site, lighting designed and installed with shielding, such that the light source cannot be seen from adjacent residential properties.
2. New industrial development on local or collector streets fronting onto residentially zoned areas shall be designed with articulated facades (for example, facades that have architectural details, wall breaks, or other architectural features which provide at least 5 feet of relief to a minimum depth of 8 inches every 20 feet of length of the building wall) facing the residential development.
3. New industrial development adjacent to residentially zoned areas shall be designed with no window openings facing residential properties and the construction of a 5-foot, 9-inch to 8-foot high solid decorative masonry wall adjacent to these properties if no such wall exists. There shall be no window openings higher that the adjacent wall.
4. All exhaust fans and exterior or rooftop mechanical equipment shall be enclosed and sound absorbing and shielding provisions shall be incorporated in the design of the project. Such equipment shall be set back as far as possible from residential property lines.

San Pedro Specific Plan

The following policies from the San Pedro Specific Plan (City of Los Angeles 1990:8) apply to visual resources.

Visual Resources

1. Lookout Point and its immediately surrounding (Appendix C) view area, as shown on the Special Features map, is designated a public viewsite. The visual corridor extending from this viewsite shown on said map shall be protected. New construction or remodeling within the immediate vicinity of the viewsite on the easterly side of Gaffey Street, as shown on said map, shall be limited to an absolute height of 24 feet, measured as set forth in Section 5B 1(a). However, the Director of Planning may permit additional height to the maximum otherwise allowed in this ordinance if he finds that such height will not obstruct the view from the viewsite. Evidence may include, but is not limited to photographs taken from the viewsite with the proposed project superimposed upon it or a topographic map showing proposed elevations of the project.
2. The Korean Bell monument and the surrounding structure, and the Osgood-Farley Battery site, as shown on the Special Features map (Appendix C), are designated public view sites. The visual corridors extending from these viewsites shall be protected. New construction or remodeling within the immediate vicinity of the viewsites, as shown on the Special Features map, shall be limited to a total height of 24 feet, measured as set forth in Sections 5B and 5C.

However, the Director of Planning may permit additional height to the maximum otherwise allowed in this ordinance if he finds that such height will not obstruct the view from the viewsite. Evidence may include, but is not limited to photographs taken from the viewsite with the proposed project superimposed upon it or a topographic map showing proposed elevations of the project.

3. White Point Reservation is designated a public viewsite and all development therein shall provide for public viewing to and along the coast.
4. Turn-out and viewsite areas from Paseo Del Mar, as shown on the Special Features map (Appendix C), shall provide unobstructed views of the ocean.
5. Utilities serving new structures shall be placed underground. Utilities for existing buildings converted to condominiums or stock cooperatives shall be placed underground. The Advisory Agency may as a condition of map approval waive any requirement for underground utilities if he finds that such would result in an unnecessary hardship inconsistent with the purposes of the Specific Plan or that there are special circumstances applicable to the subject property such as soil, shape, topography or other conditions that would make underground installations unreasonable or impractical.

Wilmington-Harbor City Community Plan

The following policies from the Wilmington-Harbor City Community Plan (City of Los Angeles 1999b:III-2, III-28, III-40-41, III-42, V-4-6) apply to visual resources.

Open Space

Policy 5-1.1. Encourage the retention of passive and visual open space that provides a balance to the urban development of the community.

Public Transportation

Policy 10-1.2. Encourage the provision of safe, attractive and clearly identifiable transit stops with user-friendly design amenities.

Relationship to the Port of Los Angeles

Policy 18-3.1. The Port's Wilmington land acquisition program should develop adequate buffers, landscaping and transitional uses between the Port and the community.

Policy 18-3.3. Port land acquisitions and development in Wilmington should bring about the timely removal of blighting activities and their replacement with uses consistent with Port development objectives and which enhance the physical, visual and economic environment of the community.

Coastal Resources

Policy 19-1.4. New and/or expanded industrial facilities to be sited to provide a sufficient open space, landscaped and maintained buffer area to minimize adverse impacts on surrounding property.

Policy 19-1.5. Provide public access and viewing areas for the public enjoyment and education of the Coastal Zone environment, including access to and viewing of recreational and industrial activities in the Port of Los Angeles consistent with public safety, efficient Port operation and the California Coastal Act.

Urban Design – Industrial

Structures. The purpose is to create attractive buffers along street frontages of industrial sites, and to serve such practical purposes as security, sound attenuation, the separation of functional areas, and the screening of unsightly nuisances, by:

1. Designing the site and building(s) to convey visual interest and to be visually compatible with adjacent uses.
2. Treating large expanses of blank walls and tilt-up concrete walls visible from the public right-of-way with contrasting complementary colors, building plane variation, murals, planters and/or other landscape elements to create visual interest.
3. Screening of mechanical and electrical equipment from public view.
4. Screening of all rooftop equipment and building appurtenances from public view.
5. Requiring the enclosure of trash areas for all projects.
6. Screening of open storage areas from public view.
7. Requiring freestanding walls to use articulations, surface perforations or other elements, and to include plantings of vines or tall shrubs or trees on exterior faces, to relieve long monotonous expanses and mitigate graffiti.
8. Using landscaping effectively to screen parking and loading areas from roadways, as a surface treatment adjacent to building walls, and to screen from public view storage areas, trash containers and utility equipment.

Lighting: Integrating exterior lighting with site design and directing exterior lighting onto the project site and locating flood lighting so as not to impact any surrounding residential uses.

Design for Industrial/Residential Interface Areas: In order to mitigate potential negative impacts generated by industrial uses when they are located adjacent to residentially zoned neighborhood, new development of industrial uses shall incorporate the following design guidelines:

Loading Areas:

1. New development of industrial uses located across a local or collect or street from a residentially zoned area shall be designed in such a manner that truck loading/unloading is restricted to the rear portion of the lot, and/or separated from the street by the structure housing the industrial use.
2. New development adjacent (abutting) residentially zoned areas shall locate facilities for loading and unloading or open storage of material and finished products on the project site and/or street frontage furthest from the residential development.

Walls/Landscaping:

1. Where vehicle parking, loading, or open storage for a new industrial development is located within 50 feet of a public street which separates the industrial and residential uses, a minimum 3 ½-foot high solid decorative masonry wall shall be provided in a front yard, or a minimum 5 foot-9 inch to 8-foot solid decorative masonry wall in a side or rear yard. A minimum 5-foot landscaped setback buffer with an installed automatic sprinkler system shall be located in front of said wall, along the street frontage.

2. New industrial development located directly across a local or collector street from a residential neighborhood shall provide a minimum 5-foot landscaped setback along any portion of the frontage, not required for driveways, facing the residential use. Said landscaping shall contain a minimum of one 24-inch box tree (with a minimum trunk diameter of two inches, a height of eight feet at the time of planting, and with an installed automatic sprinkler system) for every 20 feet of street frontage.
3. On any other interior property line that separates an industrial use from an abutting residential zone, a minimum 5-foot, 9-inch to 8-foot solid decorative masonry wall shall be provided.

Architectural Guidelines:

1. New industrial development located directly across a local or collector street, or with a lot line adjoining a residentially zoned area, shall have outdoor, on-site, lighting designed and installed with shielding, such that the light source cannot be seen from adjacent residential properties.
2. New industrial development on local or collector streets fronting onto residentially zoned areas shall be designed with articulated facades (for example, facades that have architectural details, wall breaks, or other architectural features which provide at least 5 feet of relief to a minimum depth of 8 inches every 20 feet of length of the building wall) facing the residential development.
3. New industrial development adjacent to residentially zoned areas shall be designed with no window openings facing residential properties and the construction of a 5 foot-9 inch to 8-foot high solid decorative masonry wall adjacent to these properties if no such wall exists. There shall be no window openings higher that the adjacent wall.
4. All exhaust fans and exterior or rooftop mechanical equipment shall be enclosed and sound absorbing and shielding provisions shall be incorporated in the design of the project. Such equipment shall be set back as far as possible from residential property lines.

Transportation Element

The Transportation Element of the City of Los Angeles General Plan (City of Los Angeles 1999c) designates Paseo Del Mar, Harbor Boulevard, and South Pacific Avenue as Future Alignments Designated as Scenic, but they are not Officially Designated City Scenic Highways.

Conservation Element

The following policy from the Conservation Element of the City of Los Angeles General Plan (City of Los Angeles 2001:II-48) applies to visual resources.

Land Form and Scenic Vistas

Continue to encourage and/or require property owners to develop their properties in a manner that will, to the greatest extent practical, retain significant existing land forms (e.g., ridge lines, bluffs, unique geologic features) and unique scenic features (historic, ocean, mountains, unique natural features) and/or make possible public view or other access to unique features or scenic views.

4.4 Environmental Impacts and Mitigation Measures

4.4.1 Methodology and Assumptions

Because evaluating visual impacts is inherently subjective, federal and professional standards of visual assessment methodology have been used to determine potential impacts on the aesthetic values of the project area.

Using the concepts and terminology described in Section 4.1.1, and thresholds for determining significance, described herein, analysis of the visual effects of the project is based on:

- Direct field observation from vantage points, including neighboring buildings, property, and roadways (February 26, 2010 and May 4, 2011).
- Photographic documentation of key views of and from the project site, as well as the regional visual context.
- Photorealistic simulations used to depict proposed noise barriers' heights, noise barriers, and/or cranes, as well as ocean-based construction activities.
- Shade and shadow analysis using AutoCAD Civil 3D to evaluate shadow cast from the 20-foot-tall noise barrier during the winter and summer solstices, December 21 and June 21, respectively. The noise barrier at the JWPCP East shaft site was modeled to determine the distance of the shadow for these dates. Because all of the barriers would be approximately 20 feet tall, the information gained from modeling at the JWPCP East shaft site was used to infer the potential for the noise barrier to shade at other shaft sites.
- Review of the project in regard to compliance with state and local ordinances and regulations and professional standards pertaining to visual quality.

4.4.1.1 Professional Standards

According to professional standards, a project may be considered to have a significant impact if it would significantly:

- Conflict with local guidelines or goals related to visual quality
- Alter the existing natural viewsheds, including changes in natural terrain
- Alter the existing visual quality of the region or eliminate visual resources
- Increase light and glare in the project vicinity
- Result in backscatter light into the nighttime sky
- Result in a reduction of sunlight or introduction of shadows in community areas
- Obstruct or permanently reduce visually important features
- Result in long-term (that is, persisting for 2 years or more) adverse visual changes or contrasts to the existing landscape as viewed from areas with high visual sensitivity

4.4.1.2 Baseline

CEQA Baseline

The California Environmental Quality Act (CEQA) baseline includes visual resource conditions within the viewshed of project elements. The reference date for the CEQA baseline is 2008. Under CEQA, cumulative projects are not considered part of the baseline. For example, the Los Angeles Unified School District (LAUSD) is constructing South Region High School No. 15 on the Upper Fort MacArthur Reservation, but it was not yet completed when the notice of preparation was issued. Therefore, impacts on recreational viewers using the school's facilities will not be evaluated under CEQA.

NEPA No-Federal-Action Baseline

The National Environmental Policy Act (NEPA) no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the conditions of resources at the year 2022 when construction of project elements under the U.S. Army Corps of Engineers' (Corps') jurisdiction would conclude.

The NEPA no-federal-action baseline is the same as the CEQA baseline. However, LAUSD's South Region High School No. 15 for which construction has been initiated in 2010 would be part of the NEPA no-federal-action baseline. Therefore, impacts on recreational viewers using the school's facilities will be evaluated under NEPA.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

4.4.2 Thresholds of Significance

The project would pose a significant impact if it exceeds any of the following thresholds for aesthetic resources (AES):

AES-1. Conflicts with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character.

AES-2. Substantially damages scenic resources (including, but not limited to, trees, rock outcroppings, and historic buildings) within a state scenic highway.

AES-3. Substantially degrades the existing visual character or quality of the site or its surroundings.

AES-4. Results in an adverse effect due to shading on existing visual character or quality of the site or its surroundings.

AES-5. Creates a new source of substantial light or glare that would adversely affect day or nighttime views of the area.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on aesthetic resources before mitigation. Table 4-3 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 4-3 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 4-3. Thresholds Evaluated

		Threshold				
	Alt.	AES-1	AES-2	AES-3	AES-4	AES-5
Project Element						
JWPCP East Shaft Site	1,2			X	X	X
JWPCP West Shaft Site	3,4			X	X	X
Angels Gate Shaft Site	3	X		X	X	X
Royal Palms Shaft Site	4	X		X	X	X
SP Shelf Riser/Diffuser Area	1			X		X
PV Shelf Riser/Diffuser Area	2,3	X		X		X
Existing Ocean Outfalls Riser/Diffuser Area	1–4	X		X		X

Alt. = alternative

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears. Additionally, in subsequent alternatives where no new elements are introduced under a specific threshold, that threshold is not repeated.

4.4.3 Alternative 1

4.4.3.1 Program

Alternative 1 (Program) would result in no impacts or less than significant impacts on aesthetic resources. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A).

4.4.3.2 Project

Impact AES-1. Would Alternative 1 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Rehabilitation of the existing ocean outfalls would conflict with adopted goals and policies that are in place to protect highly valued scenic views of the coast and the coastal areas that are a part of the CCNM. Construction would take place near shore in approximately 20 to 50 feet of water and would last 9 months

at 5 days per week (Monday–Friday), 10 hours per day. Marine vessels would be doing the work, and a fixed platform or structure would not be needed. Land-based views from Royal Palms Beach, White Point Park (Figure 4-4g, KOP 4), and Harbor Walkway would be adversely affected by rehabilitation of the existing ocean outfalls because these places are highly visited for their water access, recreational uses, and scenic resources. As shown in simulated KOP 5 on Figure 4-4i, residential views from atop the bluff would change from the foreground views of the ocean and waves breaking on rocks with middleground and background views of passing vessels to foreground views of a large floating platform or barge containing industrial equipment, with rock-laden barges and industrial vessels traveling back and forth to the platform or offloading material into the water. Limiting construction to typical workweek days (Monday–Friday) would eliminate construction activities seen by residents on weekends, the days when they are typically at home, and for recreationists spending weekend time in the area. Impacts resulting from rehabilitation of the existing ocean outfalls would be significant, and there is no feasible mitigation to reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction on the existing ocean outfalls for Alternative 1 (Project) would conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under CEQA would be significant.

Mitigation

No mitigation is feasible.

Residual Impacts

While construction activities would occur during the work week, which would reduce impacts by limiting views of construction activities to Monday through Friday, land-based viewing areas such as Royal Palms Beach, White Point Park, and Harbor Walkway still would receive a large number of viewers during the week. Residual impacts during construction would be significant and unavoidable.

NEPA Impact Determination

Construction on the existing ocean outfalls for Alternative 1 (Project) would conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under NEPA would be significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is feasible.

Residual Impacts

Residual impacts during construction would be significant and unavoidable, as described under the CEQA impact determination.

Impact AES-3. Would Alternative 1 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?

Shaft Site – JWPCP East

Construction

CEQA Analysis

The JWPCP East shaft site would be a working and/or exit shaft site. It would take 10 to 12 months to complete the infrastructure needed to begin tunnel excavation. Construction activities would introduce considerable heavy equipment and associated vehicles (including dozers, graders, scrapers, cranes, and trucks) into the viewshed of the shaft site, public roadways, and residential and commercial properties. Safety and directional signage would also be a visible element. Construction activities would adversely affect the existing visual character of the site and its surroundings.

There is a 12-foot-tall block wall between the JWPCP East shaft site and the adjacent streets. The wall would block most construction activities from view. However, as shown in simulated KOP 3 on Figure 4-1c, an approximately 20-foot-tall noise barrier would be erected to screen construction activities and reduce noise. There would be at least one crane on site, approximately 100 feet high, up to 60 feet of which would be visible over the noise barrier.

The JWPCP East shaft site is being analyzed as a working shaft site, as a worst-case scenario, and would be in operation for 4 to 8 years. The noise barrier would remain intact for the duration of tunnel excavation. Onsite facilities, such as construction worker parking, office trailers, mechanical shops, and excavated-material separating and storage area, would not be visible over the noise barrier.

Residents located immediately across Lomita Boulevard from the site would be the most directly affected viewers. Their views of an approximately 12-foot-tall block wall would change to an approximately 20-foot-tall noise barrier behind the existing wall within the bounds of the shaft site. The sensitivity of these residents to such impacts would be high, and they are likely to regard the construction of the noise barrier as a negative visual intrusion. Although the 12-foot-tall wall would limit background views, the noise barrier would block large portions of the sky and be perceived as an imposing vertical structure. Such a feature would detract from the existing visual character of the site and its surroundings until construction activities cease and the noise barrier is removed. Impacts on these residents are considered adverse because residents would experience a notable change in the visual character of available views during construction of the project. Mitigation Measure (MM) AES-3a would reduce these impacts but not to a less than significant level.

Truck trips to accommodate the transport of excavated material from the site and supplies to the site would occur 5 days per week (Monday–Friday) for 10 hours per day as further detailed in Chapter 18. However, these trucks would not greatly increase the degree of truck traffic on Sepulveda Boulevard and Figueroa Street as current truck traffic is already high along these routes. Impacts associated with truck traffic would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Once construction of the tunnel is complete and the tunnel boring machine (TBM) and noise barriers are removed, the only visible element remaining would be an access hatch to the shaft, minimal aboveground equipment, and, potentially, a surge tower that would be approximately 30 feet tall. The surge tower is shown in simulated KOP 3 on Figure 4-1d. The access shaft would be 40 to 60 feet in diameter, and it is assumed that the hatch would be either flush with the ground or protrude slightly above the ground's surface. However, because of the 12-foot-tall block wall (currently under construction), the hatch and aboveground pipes would not be visible. The top half of the surge tower would be visible above the wall. This would be a significant impact before mitigation. MM AES-3b would reduce visual impacts associated with the surge tower at the JWPCP East shaft site to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

Construction activities on the SP Shelf would take place approximately 7.5 miles off the coast and would last 3 years. Marine vessels and a fixed platform or structure would be required to install the riser and diffuser. While activities would occur 7.5 miles off the coast, views are still available, as evidenced by available views of Catalina Island, which is located 20 miles off the coast. However, atmospheric conditions and distance would lessen the prominence of the platform and construction activities. Land-based views from Angels Gate Park (Figure 4-3h, KOP 5) and Point Fermin Park, and from residences and roadways in the general area, would not be adversely affected by construction because views of construction activities would be barely visible within the middleground due to distance, atmospheric haze, scale of the platform, and materials of the platform, which would allow the structure to recede into the viewshed. Views of the structure would be similar in appearance and scale to boats and large vessels entering and exiting the Port of Los Angeles and passing by at a similar distance. Because of distance and typical atmospheric conditions, the riser and diffuser construction site would be visible to a lesser degree from Royal Palms Beach, White Point Park, White Point County Beach, Harbor Walkway, and from residences and roadways in the general area. Ocean views close to the construction site, especially as seen by recreationists, would be affected by construction activities and equipment. However, water-based recreationists are generally not stationary, and their views would be temporary as they passed by the construction site. Impacts on visual quality would be less than significant during construction.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Rehabilitation of the existing ocean outfalls would affect the existing visual character and quality of scenic views of the coastal area. Construction would take place near shore in approximately 20 to 50 feet of water and would last 9 months at 5 days per week (Monday–Friday), 10 hours per day. Marine vessels would be doing the work, and a fixed platform or structure is not needed. Land-based views of the existing ocean outfalls from Royal Palms Beach, White Point Park, and Harbor Walkway would be adversely affected by construction because these places are highly visited for their water access, recreational uses, and scenic resources. As shown in simulated KOP 5 on Figure 4-4d, views would change from the foreground views of the ocean and waves breaking on rocks with middleground and background views of passing vessels to foreground views of a large floating platform containing industrial equipment with rock-laden barges and industrial vessels traveling back and forth to the platform, or offloading material into the water Limiting construction to typical workweek days (Monday–Friday) would eliminate construction activities seen by residents on weekends, the days when they are typically at home, and for recreationists spending time in the area. However, impacts would be significant, and there is no feasible mitigation to reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction and operation of the JWPCP East shaft site for Alternative 1 (Project) would substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under CEQA would be significant before mitigation. Construction on the existing ocean outfalls for Alternative 1 (Project) would also substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under CEQA would be significant, and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation

MM AES-3a. Implement visual measures to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment. A mural or similar aesthetic treatment will be applied to the sections of the noise barrier prominently visible to nearby residents and/or recreationists. Appropriate paint type and surfacing materials will be selected to ensure durability of the painted or treated surfaces until the barrier is removed. Barriers will have low-sheen and non-reflective surface materials to reduce the potential for glare. The paint color or aesthetic treatment will be maintained and any graffiti will be removed in a timely manner. During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers will be accepted. Their comments will be evaluated for inclusion in the design to ensure the final treatment meets expectations to the greatest extent feasible.

MM AES-3b. Implement visual measures to reduce the visibility of new structures by painting prominent metal surfaces with colors that will blend with the setting. Selected colors will be shades that are slightly darker than the general surrounding area to reduce contrast and promote compositional

harmony of architectural features. An appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces, and the finish will be maintained over time.

Residual Impacts

Although MM AES-3a would reduce impacts by improving the visual quality of the noise barrier at the JWPCP East shaft site, visual effects associated with the presence of the noise barrier and crane would remain significant during construction. Additionally, there would be no feasible mitigation for visual impacts associated with rehabilitation of the existing ocean outfalls. Residual impacts during construction would be significant and unavoidable.

Operational impacts at the JWPCP East shaft site would be reduced to less than significant with implementation of MM AES-3b, which would minimize and screen the visual effects of the surge tower and aboveground equipment that would be visible over the concrete block wall after the noise barrier is removed.

NEPA Impact Determination

Construction and operation at the JWPCP East shaft site for Alternative 1 (Project) would substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction on the existing ocean outfalls for Alternative 1 (Project) would also substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under NEPA would be significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6), and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation

Implement MM AES-3a and MM AES-3b.

Residual Impacts

Residual impacts during construction would be significant and unavoidable, as described under the CEQA impact determination. Residual impacts during operation would be less than significant.

Impact AES-4. Would Alternative 1 (Project) result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings?

Shaft Site – JWPCP East

Construction

CEQA Analysis

AutoCAD Civil 3D was used to model shadows cast from the noise barrier at the JWPCP East shaft site during the winter and summer solstices, December 21 and June 21, respectively. The noise barrier would only cast shadows just before sunset on residences and businesses located east and south of the site. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
The only feature that would cast a shadow would be the surge tower, which would be no more than 30 feet tall and would not be located directly adjacent to Lomita Boulevard or Main Street. Its shadow would be cast on the JWPCP East shaft site, and it would not shade neighboring residents and businesses. Impacts would be less than significant.

NEPA Analysis
Environmental impacts resulting from operation of the JWPCP East shaft site would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 1 (Project) would not result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact AES-5. Would Alternative 1 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?

Shaft Site – JWPCP East

Construction

CEQA Analysis
The noise barrier at the JWPCP East shaft site would introduce a flat, tall, vertical surface that would reflect sunlight and light from street lamps. The surface area of the barrier would increase glare seen by residents and roadway users. Lighting would be used during nighttime construction. Therefore, there would be a minor amount of project-related nighttime light and glare visible over the 20-foot-tall noise barrier if lighting were not directed downward or if a large amount of ambient lighting were used that

radiated up and above the noise barrier. Impacts would be significant prior to mitigation. MM AES-5a and MM AES-5b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

Construction activities would occur on the SP Shelf approximately 7.5 miles off the coast. Therefore, land-based views would not be affected by glare or the use of nighttime lighting. The ocean has a vast reflective surface that produces a great deal of glare; construction activities and equipment would not create a perceivable increase in glare, and ocean views near the construction site would not be affected by glare from construction activities and equipment. Lighting would be used during nighttime work. This lighting could be standard lighting used to illuminate the platform for safety and higher intensity spot lighting used to more directly illuminate work activities. However, this would produce only a small amount of nighttime light and glare, given the distance away from sensitive viewers, similar to the amount of light a large boat traveling at night would cast. Additionally, there would be few ocean viewers near the construction site at night. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Rehabilitation activities on the existing ocean outfalls would take place near shore in approximately 20 to 50 feet of water. Construction would last 9 months at 5 days per week (Monday–Friday), 10 hours per day. Marine vessels would be doing the work, and a fixed platform or structure would not be needed. Nighttime lighting could be used at times and would include standard lighting to illuminate vessels for safety and higher intensity spot lighting to more directly illuminate work activities. However, because of the 10-hour workdays, the use of nighttime lighting would be minimal and temporary over a short construction period. Land-based views would not be affected by glare. In addition, the ocean has a vast reflective surface that produces a great deal of glare; construction activities and equipment would not create a perceivable increase in glare, and ocean views near the construction site would not be affected by glare from construction activities and equipment. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With

respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction at the JWPCP East shaft site for Alternative 1 (Project) would create a new source of substantial light or glare that would adversely affect day or nighttime views of the area. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM AES-5a (same as MM AES-3a).

MM AES-5b. Apply minimum lighting standards. Lights will be installed at the lowest practicable height and with the lowest practicable wattage. Lights will be screened and directed downward to the greatest degree possible. The number of nighttime lights will be minimized.

Residual Impacts

MM AES-5a and MM AES-5b would reduce impacts associated with glare and nighttime lighting at the JWPCP East shaft site. Residual impacts would be less than significant.

NEPA Impact Determination

Construction at the JWPCP East shaft site for Alternative 1 (Project) would create a new source of substantial light or glare that would adversely affect day or nighttime views of the area. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM AES-5a (same as MM AES-3a) and MM AES-5b.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

4.4.3.3 Impact Summary – Alternative 1

As determined in the Preliminary Screening Analysis, all program elements would result in no impacts or less than significant impacts on aesthetic resources; therefore, the program is not evaluated in this EIR/EIS. Impacts on aesthetic resources analyzed in this EIR/EIS for Alternative 1 (Project) are summarized in Table 4-4. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 4-4. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AES-1. Would Alternative 1 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?				
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Impact AES-3. Would Alternative 1 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM AES-3a. Implement visual measures to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment. A mural or similar aesthetic treatment will be applied to the sections of the noise barrier prominently visible to nearby residents and/or recreationists. Appropriate paint type and surfacing materials will be selected to ensure durability of the painted or treated surfaces until the barrier is removed. Barriers will have low-sheen and non-reflective surface materials to reduce the potential for glare. The paint color or aesthetic treatment will be maintained and any graffiti will be removed in a timely manner. During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers will be accepted. Their comments will be evaluated for inclusion in the design to ensure the final treatment meets expectations to the greatest extent feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-3a	NEPA Significant and Unavoidable Impact During Construction

Table 4-4 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Significant Impact During Operation	N/A	MM AES-3b. Implement visual measures to reduce the visibility of new structures by painting prominent metal surfaces with colors that will blend with the setting. Selected colors will be shades that are slightly darker than the general surrounding area to reduce contrast and promote compositional harmony of architectural features. An appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces, and the finish will be maintained over time.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM AES-3b	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Impact AES-4. Would Alternative 1 (Project) result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 4-4 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AES-5. Would Alternative 1 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM AES-5a (same as MM AES-3a) MM AES-5b. Apply minimum lighting standards. Lights will be installed at the lowest practicable height and with the lowest practicable wattage. Lights will be screened and directed downward to the greatest degree possible. The number of nighttime lights will be minimized.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-5a (same as MM AES-3a) MM AES-5b	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

4.4.4 Alternative 2

4.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program); program elements would result in no impacts or less than significant impacts on aesthetic resources. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A).

4.4.4.2 Project

The impacts for the JWPCP East shaft site and the rehabilitation of the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact AES-1. Would Alternative 2 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

Construction of the riser and diffuser on the PV shelf would conflict with adopted goals and policies that are in place to protect highly valued scenic views of the coast and the coastal areas that are a part of the CCNM. Construction would take place approximately 2 miles off the coast in 175 feet of water and would last 3 years. Marine vessels and a fixed platform or barge would be required to install the riser and diffuser. Land-based views from Angels Gate and Point Fermin Parks, and from residences and roadways in the general area, could be adversely affected by construction because views of construction activities would be visible within the middleground. As shown in simulated KOP 6 on Figure 4-3j, viewers near Angels Gate and Point Fermin Parks that are used to seeing breaking waves in the foreground with middleground and background views of passing vessels, would be subject to middleground views of a large, floating platform or barge with industrial equipment for an extended period of time. These land-based viewpoints could be affected because they are highly desirable locations, providing physical access to the water and coastline, a high amount of recreational use, and scenic resources with visual access to coastal views. However, because of distance, typical atmospheric conditions, and the presence of other vessels in the background, impacts on views of the area resulting from the riser and diffuser construction site would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction on the existing ocean outfalls for Alternative 2 (Project) would conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under CEQA would be significant.

Mitigation

No mitigation is feasible.

Residual Impacts

While construction activities would occur during the work week, which would reduce impacts by limiting views of construction activities to Monday through Friday, construction for the rehabilitation of the existing ocean outfalls still would receive a large number of viewers during the week from land-based viewing areas. Residual impacts during construction would be significant and unavoidable.

NEPA Impact Determination

Construction on the existing ocean outfalls for Alternative 2 (Project) would conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an

adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under NEPA would be significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is feasible.

Residual Impacts
Residual impacts during construction would be significant and unavoidable, as described under the CEQA impact determination.

Impact AES-3. Would Alternative 2 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
Construction of the riser and diffuser area on the PV Shelf would affect the existing visual character and quality of scenic views of the coastal area. Construction would take place approximately 2 miles off the coast in 175 feet of water and would last 3 years. Marine vessels and a fixed platform or barge would be required to install the riser and diffuser. Land-based views from Angels Gate and Point Fermin Parks, and from residences and roadways in the general area, could be adversely affected by construction because views of construction activities would be visible within the middleground. As shown in simulated KOP 6 on Figure 4-3j, viewers near Angels Gate and Point Fermin Parks that are used to seeing breaking waves in the foreground with middleground and background views of passing vessels, would be subject to middleground views of a large, floating platform or barge with industrial equipment for an extended period of time. These land-based viewpoints could be affected because they are highly desirable locations, providing physical access to the water and coastline, a high amount of recreational use, and scenic resources with visual access to coastal views. However, because of distance, typical atmospheric conditions, and the presence of other vessels in the background, impacts on views of the area resulting from the riser and diffuser construction site would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination
Construction and operation at the JWPCP East shaft site for Alternative 2 (Project) would substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under CEQA would be significant before mitigation. Construction on the existing ocean outfalls for Alternative 2 (Project) would also substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under CEQA would be significant, and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation
Implement MM AES-3a and MM AES-3b.

Residual Impacts

Although MM AES-3a would reduce impacts by improving the visual quality of the noise barrier at the JWPCP East shaft site, visual effects associated with the presence of the 20-foot-tall noise barrier and 100-foot-tall crane would remain significant during construction. Additionally, there would be no mitigation for visual impacts associated with rehabilitation of the existing ocean outfalls. While construction activities would be limited to the workweek, the project site would still receive a large number of viewers during the week. Residual impacts during construction would be significant and unavoidable.

Operational impacts at the JWPCP East shaft site would be reduced to less than significant with implementation of MM AES-3b, which would minimize the visual effects of the surge tower and aboveground equipment that would be visible over the concrete block wall after the 20-foot-tall noise barrier is removed.

NEPA Impact Determination

Construction and operation at the JWPCP East shaft site for Alternative 2 (Project) would substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction on the existing ocean outfalls for Alternative 2 (Project) would also substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under NEPA would be significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6), and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation

Implement MM AES-3a and MM AES-3b.

Residual Impacts

Residual impacts during construction would be significant and unavoidable, as described under the CEQA impact determination. Residual impacts during operation would be less than significant.

Impact AES-5. Would Alternative 2 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

Construction activities on the PV Shelf would take place approximately 2 miles off the coast in 175 feet of water. Land-based views would not be affected by glare or the use of nighttime lighting. Although the construction activities would occur near land-based viewers, the ocean has a vast reflective surface that produces a great deal of glare, and construction activities and equipment would not create a perceivable increase in glare. Likewise, ocean views near the construction site would not be affected by a perceivable increase in glare from construction activities and equipment. Lighting would be used during nighttime work. This lighting could be standard lighting used to illuminate the platform for safety and higher intensity spot lighting used to more directly illuminate work activities. However, this would produce only a small amount of nighttime light and glare, given the distance away from sensitive viewers, similar to the amount of light a large boat traveling at night would cast. Additionally, there would be few ocean viewers near the construction site at night. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction at the JWPCP East shaft site for Alternative 2 (Project) would create a new source of substantial light or glare that would adversely affect day or nighttime views of the area. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM AES-5a (same as MM AES-3a) and MM AES-5b.

Residual Impacts

MM AES-5a and MM AES-5b would reduce impacts associated with glare and nighttime lighting at the JWPCP East shaft site. Residual impacts would be less than significant.

NEPA Impact Determination

Construction at the JWPCP East shaft site for Alternative 2 (Project) would create a new source of substantial light or glare that would adversely affect day or nighttime views of the area. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM AES-5a (same as MM AES-3a) and MM AES-5b.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

4.4.4.3 Impact Summary – Alternative 2

As determined in the Preliminary Screening Analysis, all program elements would result in no impacts or less than significant impacts on aesthetic resources; therefore, the program is not evaluated in this EIR/EIS. Impacts on aesthetic resources analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 4-5. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 4-5. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AES-1. Would Alternative 2 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?				
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Impact AES-3. Would Alternative 2 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM AES-3a. Implement visual measures to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment. A mural or similar aesthetic treatment will be applied to the sections of the noise barrier prominently visible to nearby residents and/or recreationists. Appropriate paint type and surfacing materials will be selected to ensure durability of the painted or treated surfaces until the barrier is removed. Barriers will have low-sheen and non-reflective surface materials to reduce the potential for glare. The paint color or aesthetic treatment will be maintained and any graffiti will be removed in a timely manner. During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers will be accepted. Their comments will be evaluated for inclusion in the design to ensure the final treatment meets expectations to the greatest extent feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-3a	NEPA Significant and Unavoidable Impact During Construction

Table 4-5 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Significant Impact During Operation	N/A	MM AES-3b. Implement visual measures to reduce the visibility of new structures by painting prominent metal surfaces with colors that will blend with the setting. Selected colors will be shades that are slightly darker than the general surrounding area to reduce contrast and promote compositional harmony of architectural features. An appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces, and the finish will be maintained over time.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM AES-3b	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Impact AES-4. Would Alternative 2 (Project) result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 4-5 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AES-5. Would Alternative 2 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM AES-5a (same as MM AES-3a) MM AES-5b. Apply minimum lighting standards. Lights will be installed at the lowest practicable height and with the lowest practicable wattage. Lights will be screened and directed downward to the greatest degree possible. The number of nighttime lights will be minimized.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-5a (same as MM AES-3a) MM AES-5b	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

4.4.5 Alternative 3

4.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program); program elements would result in no impacts or less than significant impacts on aesthetic resources. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A).

4.4.5.2 Project

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as for Alternative 2 (Project). The impacts for the rehabilitation of the existing ocean outfalls would be the same as for Alternative 1 (Project).

Impact AES-1. Would Alternative 3 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?

Shaft Site – Angels Gate

Construction

CEQA Analysis

The Angels Gate shaft site would be an access shaft site. It would take 8 to 9 months to construct and would be in use for up to 2.5 years for ventilation and worker access. Construction would take place on the paved northwest corner of the intersection of Shepard Street and South Gaffey Street. Construction activities would introduce heavy equipment and associated vehicles (including dozers, graders, scrapers, cranes, and trucks) into the viewshed of the shaft site, public roadways, and residential and commercial properties. Safety and directional signage would also be a visible element. Construction at the shaft site would conflict with adopted goals and policies that are in place to protect highly valued scenic views of the coast and coastal areas that are also a part of the CCNM. As directed by the San Pedro Local Coastal Program Specific Plan (City of Los Angeles 1999a), coastal views from the Korean Bell of Friendship should not be obstructed.

Shaft site construction would be mostly screened from viewer groups by an approximately 20-foot-tall noise barrier that would be erected at the onset of construction to screen work activities and reduce noise (Figure 4-3c, simulated KOP 3 and Figure 4-3f, simulated KOP 4). There would be at least one crane on site, approximately 100 feet tall, which would be visible over the noise barrier.

Residents have limited views of the coast because their ground level views are obscured by adjacent infrastructure and vegetation at Point Fermin Park; therefore, protected coastal views would not be affected. However, residents would see the change in the existing visual character at the shaft site and would be directly affected, being located immediately across South Gaffey Street from the site. As shown in simulated KOP 3 on Figure 4-3c, their views would change from an open parking lot and views of the hillside below Angels Gate Park to a 20-foot-tall noise barrier. The sensitivity of these residents to such impacts would be high, and they are likely to regard the construction of the noise barrier as a negative visual intrusion. An approximately 20-foot-tall barrier so close to residents would block large portions of the sky and be perceived as an imposing vertical structure. Such a feature would detract from the existing visual character of the site and its surroundings until construction activities cease and the noise barrier is removed. Impacts on visual quality for these residences are considered adverse because the residents would experience a notable change in the visual character of available views during construction of the project.

Recreationists at Angels Gate Park would be the most directly affected by changes in protected views of the coast because the park is located at a higher elevation, with views down toward the site and out to the coast. As shown in simulated KOP 4 on Figure 4-3f, their views would change from an open paved lot, nearby residences, and the ground plane and vegetation of Point Fermin Park to a noise barrier in the foreground that disrupts the existing viewshed out to the ocean. The noise barrier would block large portions of residences and the ground plane of Point Fermin Park and be perceived as an imposing vertical structure, inconsistent with the existing visual character. Impacts on visual quality for recreationists are considered significant because the barrier would create a notable change in the visual character in available protected views of the coast. MM AES-1 would reduce these impacts; however, impacts would remain significant.

In addition, noises associated with the shaft site and truck traffic to the site would draw attention to construction activities, likely to be viewed negatively, and act to further disrupt coastal views. There would be 40 truck trips per day to accommodate transporting excavated material from the site. These trucks would be visible on South Gaffey Street and Shepard Street, and truck traffic on local routes would increase. Truck traffic would occur during hours of shaft construction, which would be 5 days per week (Monday–Friday) for 10 hours per day. While current traffic is high along these routes, this increase in truck traffic on local routes at a site-specific location would affect all viewer groups. Residents would be affected the most because they are close to the site and have direct long-lasting views of the site. They would have immediate and repeated views of trucks entering and exiting the site, especially because construction and truck traffic would occur prior to and after typical work hours when residents are at home. Views from these locations would be further affected by construction activities because these are highly visited areas with visual access to the ocean, a high amount of recreational use, and valued scenic resources. Impacts would be significant, and there is no feasible mitigation to reduce impacts to less than significant.

NEPA Analysis

The LAUSD's South Region High School No. 15 would be constructed on the Upper Fort MacArthur Reservation, which is located east of Alma Street and between 30th and 36th Streets. The school would be 0.5 mile northeast of the Angels Gate shaft site, and is included in the NEPA analysis; however, the high school would not have views of the coast because of intervening topography and development. Therefore, impacts on visual quality from the high school would be less than significant. All other environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) would conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under CEQA would be significant before mitigation. Construction on the existing ocean outfalls for Alternative 3 (Project) would also conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under CEQA would be significant, and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation

Implement MM AES-1 (same as MM AES-3a).

Residual Impacts

Even with the incorporation of MM AES-1 to improve the visual quality of the noise barrier at the Angels Gate shaft site, the effects associated with the noise barrier and crane would not be reduced to less than significant during shaft construction. In addition, there is no feasible mitigation to lessen the impact of the high level of construction traffic seen entering and exiting Angels Gate shaft site. While rehabilitation activities associated with the existing ocean outfalls would occur during the work week and views of construction activities would be limited to Monday through Friday, the project site would still receive a large number of viewers during the week. Residual impacts during construction would be significant and unavoidable.

NEPA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) would conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction on the existing ocean outfalls for Alternative 3 (Project) would also conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under NEPA would be significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6), and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation

Implement MM AES-1 (same as MM AES-3a).

Residual Impacts

Residual impacts during construction would be significant and unavoidable, as described under the CEQA impact determination.

Impact AES-3. Would Alternative 3 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?

Shaft Site – JWPCP West

Construction

CEQA Analysis

The JWPCP West shaft site would be a working shaft site. It would take 10 to 12 months to complete the infrastructure needed to begin tunnel excavation. Construction activities would introduce considerable heavy equipment and associated vehicles (including dozers, graders, scrapers, cranes, and trucks) into the viewshed of the shaft site, public roadways, and the nearby Wilmington Athletic Complex. Safety and directional signage would also be a visible element. Construction activities would adversely affect the existing visual character of the site and its surroundings.

The shaft site is presently screened by a landscape buffer along Figueroa Street. As shown in simulated KOP 4 on Figure 4-2c, an approximately 20-foot-tall noise barrier would be erected to screen construction activities and reduce noise. There would be at least one crane on site, approximately 100 feet tall, which would be visible over the noise barrier. The JWPCP West shaft site would be in operation for 4 to 8 years. The noise barrier would remain intact for the duration of tunnel excavation. Onsite facilities, such as construction worker parking, office trailers, mechanical shops, and an excavated-material separating and storage area would not be visible over the noise barrier.

Because the Wilmington Athletic Complex is located immediately across Figueroa Street from the shaft site, recreationists would be the most directly affected viewers as shown in KOP 1 on Figure 4-2a. Their views of a landscaped buffer and existing utility lines would change to a 20-foot-tall noise barrier behind the landscape buffer and within the bounds of the shaft site. Although the existing landscaping screens views to the background, a 20-foot-tall barrier in proximity to the athletic complex would block portions of the sky. Such a feature would detract from the existing visual character of the site and its surroundings until construction activities cease and the noise barrier is removed. Recreationists would experience a change in the visual character of available views during construction of the project. The sensitivity of

recreationists to such impacts would be low to moderate as they would be actively engaged in outdoor field sports. Implementation of MM AES-3a would reduce impacts to less than significant.

Truck trips to accommodate the transport of excavated material from the site and supplies to the site would occur 5 days per week (Monday–Friday) for 10 hours per day as further detailed in Chapter 18. However, these trucks would not greatly increase the degree of truck traffic on Figueroa Street, Pacific Coast Highway, and Sepulveda Boulevard, as current truck traffic is already high along these routes. Impacts associated with truck traffic would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Once construction of the tunnel is complete and the TBM and noise barriers are removed, the only visible element remaining would be an access hatch to the shaft, minimal aboveground equipment, and potentially, a surge tower that would be no more than three stories (approximately 30 feet) tall. The surge tower would be slightly visible from the intersection of Figueroa Street and Q Street (near the Wilmington Boys and Girls Club and a residential area), as shown in simulated KOP 4 on Figure 4-2d. The working shaft would be 40 to 60 feet in diameter, and it is assumed that the hatch would either be flush with the ground or protrude slightly above the ground's surface. However, due to the existing landscape barrier, the hatch and other aboveground structures would not be visible from Figueroa Street. They would be partially visible through a gap in the landscape barrier along the northeastern border of the site and from I-110. The top half of the surge tower would be visible over the existing landscaping, from the gap in the landscaping, and from I-110. Impacts would be significant before mitigation. MM AES-3b would reduce visual impacts associated with the surge tower at the JWPCP West shaft site to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

Angels Gate would be an access shaft site that would take 8 to 9 months to complete; it would be in use for up to 2.5 years. Construction of the shaft site would substantially degrade the existing visual character or quality of the site or its surroundings. Affected viewsheds include that of the shaft site and views of the coast that contain the shaft site. As addressed under Impact AES-1, views of the coast are protected in this location because of their existing visual character and quality. Even if these views were not protected, the project would affect coastal views and the existing visual character and quality of coastal views that are generally highly regarded. Because view protection is tied to visual character and quality, impacts under this threshold are closely tied to impacts under Impact AES-1. Therefore, construction of the Angels Gate shaft site would adversely affect available views of the coast, degrading the visual

character of the site, and the visual quality of ocean views across the site. Impacts during construction would be significant. See discussion under Impact AES-1 for further details.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Once construction of the tunnel is complete and noise barriers are removed, the only visible element remaining would be an access hatch to the shaft (Figure 4-3d, simulated KOP 3 and Figure 4-3g, simulated KOP 4). The access shaft would be approximately 25 to 35 feet in diameter, and it is assumed that the hatch may either be flush with the ground or protrude slightly above the ground's surface. The hatch would be located in an area that is presently paved. Impacts would be significant prior to mitigation. MM AES-3b would reduce impacts to less than significant.

NEPA Analysis

The LAUSD's South Region High School No. 15 would be constructed and is included in the NEPA analysis; however, the high school would not have views of the Angels Gate shaft site because of intervening topography and development. Students, staff, and school site visitors would not experience changes in the quality of the view due to shaft site construction. Therefore, visual impacts associated with the high school would be less than significant. All other environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation at the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) would substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under CEQA would be significant before mitigation. Construction on the existing ocean outfalls for Alternative 3 (Project) would also substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under CEQA would be significant, and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation

Implement MM AES-3a and MM AES-3b.

Residual Impacts

MM AES-3a would reduce impacts to less than significant by improving the visual quality of the noise barrier at the JWPCP West shaft site, whose primary viewers would be recreationists engaged in outdoor sport activities at the nearby Wilmington Athletic Complex. For individuals enjoying coastal views and the visual character of the coastal neighborhood at the Angels Gate shaft site, visual effects associated with the presence of the noise barrier and crane during construction would remain significant after mitigation. Additionally, there would be no feasible mitigation for visual impacts associated with the high level of construction traffic entering and exiting the Angels Gate shaft site and activities associated with the rehabilitation of the existing ocean outfalls. Residual impacts during construction would be significant and unavoidable.

Operational impacts at the JWPCP West and Angels Gate shaft sites would be reduced with implementation of MM AES-3b, which would lessen the visibility of new structures. Therefore, residual impacts during operation would be less than significant.

NEPA Impact Determination

Construction and operation of the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) would substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction on the existing ocean outfalls for Alternative 3 (Project) would also substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under NEPA would be significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6), and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation

Implement MM AES-3a and MM AES-3b.

Residual Impacts

Residual impacts during construction would be less than significant at the JWPCP West shaft site and significant and unavoidable at the Angels Gate shaft site and for rehabilitation of the existing ocean outfalls, as described under the CEQA impact determination. Residual impacts during operation would be less than significant.

Impact AES-4. Would Alternative 3 (Project) result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings?

Shaft Site – JWPCP West

Construction

CEQA Analysis

Information from the AutoCAD Civil 3D shadow model for the JWPCP East shaft site was applied to the JWPCP West shaft site and indicates that the noise barrier would cast shadows just before sunset on the Wilmington Athletic Complex, which closes at dark and is located to the east. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

The only feature that would cast a shadow would be the surge tower, which would be no more than 30 feet tall and would not be located directly adjacent to West Lomita Boulevard or Figueroa Street. The surge tower would be slightly visible from the intersection of Figueroa Street and Q Street (near the Wilmington Boys and Girls Club and a residential area), as shown in simulated KOP 4 and shown on Figure 4-2d. Its shadow would be cast on the JWPCP West shaft site, and it would not shade the neighboring Wilmington Athletic Complex. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis
Information from the AutoCAD Civil 3D shadow model for the JWPCP East shaft site was applied to the Angels Gate shaft site and indicates that the noise barrier would cast shadows just before sunset on residences and businesses to the east and Point Fermin Park to the south. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction and operation of Alternative 3 (Project) would not result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction and operation of Alternative 3 (Project) would not result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact AES-5. Would Alternative 3 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

The noise barrier at the JWPCP West and the Angels Gate shaft sites would introduce a flat, tall, vertical surface that would reflect sunlight and light from street lamps. The surface area of the barrier would increase glare seen by residents and roadway users. Lighting would be used during nighttime construction. Therefore, there would be a minor amount of project-related nighttime light and glare visible over the 20-foot-tall noise barrier if lighting were not directed downward or if a large amount of ambient lighting were used that radiated up and above the noise barrier. Impacts would be significant prior to mitigation. MM AES-5a and MM AES-5b would reduce impacts to less than significant.

NEPA Analysis

The LAUSD's South Region High School No. 15 would be constructed and is included in the NEPA analysis for the Angels Gate shaft site. However, views of the coast from the high school would not be affected because intervening topography and existing development between the high school and the shaft site would block any light and glare from the shaft site. Therefore, visual impacts associated with the high school would be less than significant. All other environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) would create a new source of substantial light or glare that would adversely affect day or nighttime views of the area. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM AES-5a (same as MM AES-3a) and MM AES-5b.

Residual Impacts

MM AES-5a and MM AES-5b would reduce impacts associated with glare and nighttime lighting at the JWPCP West and Angels Gate shaft sites. Residual impacts during construction would be less than significant.

NEPA Impact Determination

Construction at the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) would create a new source of substantial light or glare that would adversely affect day or nighttime views of the area. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM AES-5a (same as MM AES-3a) and MM AES-5b.

Residual Impacts

Residual impacts during construction would be less than significant, as described under the CEQA impact determination.

4.4.5.3 Impact Summary – Alternative 3

As determined in the Preliminary Screening Analysis, all program elements would result in no impacts or less than significant impacts on aesthetic resources; therefore, the program is not evaluated in this EIR/EIS. Impacts on aesthetic resources analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 4-6. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 4-6. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AES-1. Would Alternative 3 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?				
Shaft Site				
Angels Gate	CEQA Significant Impact During Construction	N/A	MM AES-1 (same as MM AES-3a). Implement visual measures to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment. A mural or similar aesthetic treatment will be applied to the sections of the noise barrier prominently visible to nearby residents and/or recreationists. Appropriate paint type and surfacing materials will be selected to ensure durability of the painted or treated surfaces until the barrier is removed. Barriers will have low-sheen and non-reflective surface materials to reduce the potential for glare. The paint color or aesthetic treatment will be maintained and any graffiti will be removed in a timely manner. During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers will be accepted. Their comments will be evaluated for inclusion in the design to ensure the final treatment meets expectations to the greatest extent feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-1 (same as MM AES-3a)	NEPA Significant and Unavoidable Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 4-6 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Impact AES-3. Would Alternative 3 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?				
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM AES-3a (same as MM AES-1)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-3a (same as MM AES-1)	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM AES-3b. Implement visual measures to reduce the visibility of new structures by painting prominent metal surfaces with colors that will blend with the setting. Selected colors will be shades that are slightly darker than the general surrounding area to reduce contrast and promote compositional harmony of architectural features. An appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces, and the finish will be maintained over time.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM AES-3b	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Significant Impact During Construction	N/A	MM AES-3a (same as MM AES-1)	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-3a (same as MM AES-1)	NEPA Significant and Unavoidable Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM AES-3b	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM AES-3b	NEPA Less Than Significant Impact During Operation

Table 4-6 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Impact AES-4. Would Alternative 3 (Project) result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact AES-5. Would Alternative 3 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?				
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM AES-5a (same as MM AES-3a) MM AES-5b. Apply minimum lighting standards. Lights will be installed at the lowest practicable height and with the lowest practicable wattage. Lights will be screened and directed downward to the greatest degree possible. The number of nighttime lights will be minimized.	CEQA Less Than Significant Impact During Construction

Table 4-6 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Significant Impact During Construction	Indirect	MM AES-5a (same as MM AES-3a) MM AES-5b	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Significant Impact During Construction	N/A	MM AES-5a (same as MM AES-3a) MM AES-5b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-5a (same as MM AES-3a) MM AES-5b	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

4.4.6 Alternative 4 (Recommended Alternative)

4.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program); program elements would result in no impacts or less than significant impacts on aesthetic resources. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A).

4.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years. The construction impacts for the rehabilitation of the existing ocean outfalls for Alternative 4 (Project) would be the same as for Alternative 1 (Project). Note that rehabilitation of the existing ocean outfalls could occur during construction at the Royal Palms shaft site; therefore, both activities could be visible in the view represented by KOP 5.

Impact AES-1. Would Alternative 4 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?

Shaft Site – Royal Palms

Construction

CEQA Analysis

The Royal Palms shaft would be an exit shaft. It would take 6 to 9 months to complete and would be in use for approximately 24 to 27 months. Construction of the shaft site would conflict with adopted goals and policies to protect highly valued scenic views of the coast and coastal areas that are also a part of the CCNM. Construction would take place at the bottom of Kay Fiorentino Drive, the entry road to the Royal Palms Beach. The land, which is primarily owned by the Sanitation Districts, presently consists of a grassed area enclosed by a chain link fence. The Sanitation Districts' existing tunnels, manifold structure, and outfalls are located underground within the fenced area. Access covers and vent stacks are visible at the surface. Wooden utility poles are also present along the fence line. There is also a remnant stone wall on the outside of the western edge of the fence. Construction would take place 5 days per week (Monday–Friday), 10 hours per day. Construction activities would introduce heavy equipment and associated vehicles (including dozers, graders, scrapers, cranes, and trucks) into the viewshed of the shaft site, public roadways, and residential and commercial properties. Safety and directional signage would also be a visible element.

Shaft site construction would be visible to viewer groups until a 20-foot-tall noise barrier is erected to screen construction activities and reduce noise (Figure 4-4b, simulated KOP 1 and Figure 4-4e, simulated KOP 2). There would be at least one crane on site, up to approximately 100 feet tall, which would be visible over the noise barrier. As shown in simulated KOP 1on Figure 4-4b and simulated KOP 2 on Figure 4-4e, land-based views from White Point Park and Royal Palms Beach would be greatly altered and adversely affected by construction at this location because these locations are highly visited for their recreational and scenic resources. The noise barrier would detract from coastal views by placing a large physical barrier around the shaft site, with a crane rising above the barrier, both of which would draw attention to the construction area and away from scenic views.

Residents and recreationists on Harbor Walkway would be able to look down onto the shaft site and see construction activities. This would negatively affect views by introducing industrial elements into a coastal setting. As shown in simulated KOP 1 on Figure 4-4b, recreationists at White Point Park would be highly affected because the park is located at a higher elevation with views down toward the site and the coast. The views of a relatively continuous coastal bluff shoreline would be replaced by a shoreline disrupted by a 20-foot-tall noise barrier. Recreationists at Royal Palms Beach would be the most directly affected, with immediate and ground-level views of the fenced grassy lot being replaced by a 20-foot-tall barrier, as shown in simulated KOP 2 on Figure 4-4e. The barrier would be perceived as an imposing vertical structure, inconsistent with the existing visual character, and would likely be regarded as a negative visual intrusion. Impacts on visual quality for residents and recreationists are considered significant because the barrier would create a notable change in the visual character in available protected views of the coast. MM AES-1 would reduce these impacts; however, impacts would remain significant.

In addition, noise associated with the shaft site and truck traffic to and from the site would draw attention to construction activities, which would further disrupt coastal views. There would be 40 truck trips per day to accommodate transporting excavated material from the site. There is a narrow travel way from

Kay Fiorentino Drive to the parking lots north and south of the shaft site. The construction traffic using the entry road would temporarily back up recreational traffic as vehicles enter or exit the shaft site. Residents would be affected the most because they are close to the site and have direct long-lasting views of the site. They would have immediate and repeated views of trucks entering and exiting the site. Views from these locations would be further affected by construction activities because these are highly visited areas with visual access to the ocean, a high amount of recreational use, and valued scenic resources. Impacts would be significant, and there is no feasible mitigation to reduce these impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the Royal Palms shaft site for Alternative 4 (Project) would conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under CEQA would be significant before mitigation. Construction on the existing ocean outfalls for Alternative 4 (Project) would also conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under CEQA would be significant, and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation

Implement MM AES-1 (same as MM AES-3a).

Residual Impacts

Although MM AES-1 would reduce impacts by improving the visual quality of noise barriers at the Royal Palms shaft site, the effects associated with the presence of a noise barrier and crane would not be reduced to less than significant during construction. In addition, there is no feasible mitigation to lessen the visual impacts associated with the high level of construction traffic entering and exiting the Royal Palms shaft site. While rehabilitation activities associated with the existing ocean outfalls would occur during the workweek and views of construction activities would be limited to Monday through Friday, this element would receive a large number of viewers during the week. Residual impacts during construction would be significant and unavoidable.

NEPA Impact Determination

Construction at the Royal Palms shaft site for Alternative 4 (Project) would conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction on the existing ocean outfalls for Alternative 4 (Project) would also conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6), and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation
Implement MM AES-1 (same as MM AES-3a).

Residual Impacts
Residual impacts during construction would be significant and unavoidable, as described under the CEQA impact determination.

Impact AES-3. Would Alternative 4 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?

Shaft Site – Royal Palms

Construction

CEQA Analysis
The Royal Palms shaft would be an exit shaft. It would take 6 to 9 months to complete and would be in use for up to 3 years. Construction of the shaft site would degrade the existing visual character or quality of the site or its surroundings. Affected viewsheds include that of the shaft site and views of the coast that contain the shaft site, described in more detail in the following paragraphs. As addressed in Impact AES-1, views of the coast are protected in this location because of their existing visual character and quality. Even if these views were not protected, the project would affect coastal views and the existing visual character and quality of coastal views that are generally highly regarded. Because view protection is tied to visual character and quality, impacts under this threshold are closely tied to impacts under Impact AES-1. Therefore, construction of the Royal Palms shaft site would adversely affect available views of the coast, degrading the visual character of the site, and the visual quality of ocean views that contain the site. Impacts during construction would be significant. See discussion under Impact AES-1 for further detail.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
Once construction of the tunnel is complete and the TBM and noise barriers are removed, the only visible element remaining would be access hatches to the shaft and to the valve structure, as well as vent stacks that are similar to the existing facilities. The access hatch for the shaft would be approximately 25 to 35 feet in diameter, and for the valve structure would be approximately 10 feet by 20 feet in length. It is assumed that the hatch would be either flush with the ground or protrude slightly above the ground's surface. This would be a significant impact before mitigation. MM AES-3b would reduce visual impacts associated with the access hatches and vent stacks at the Royal Palms shaft site to less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) would substantially degrade the existing visual character or quality of the site and its surroundings. Impacts under CEQA would be significant before mitigation. Construction on the existing ocean outfalls for Alternative 4 (Project) would also substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under CEQA would be significant, and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation

Implement MM AES-3a and MM AES-3b.

Residual Impacts

MM AES-3a would reduce impacts during construction to less than significant by improving the visual quality of the noise barrier at the JWPCP West shaft, whose primary viewers would be recreationists engaged in outdoor sport activities at the nearby Wilmington Athletic Complex. For individuals enjoying coastal views and the visual character of the coastal resources at the Royal Palms shaft site, the visual effects associated with the presence of a noise barrier and crane during construction would remain significant after mitigation. While rehabilitation activities associated with the existing ocean outfalls would occur during the workweek and views of construction activities would be limited to Monday through Friday, this element would receive a large number of viewers during the week. Residual impacts during construction would be significant and unavoidable.

Operational impacts associated with the surge tower at the JWPCP West shaft site and the access hatch at the Royal Palms shaft site would be reduced to less than significant with implementation of MM AES-3b. Therefore, residual impacts during operation would be less than significant.

NEPA Impact Determination

Construction and operation at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) would substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction on the existing ocean outfalls for Alternative 4 (Project) would also substantially degrade the existing visual character or quality of the site or its surroundings. Impacts under NEPA would be significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6), and there is no feasible mitigation to reduce impacts to less than significant.

Mitigation

Implement MM AES-3a and MM AES-3b.

Residual Impacts

Residual impacts during construction would be less than significant at the JWPCP West shaft site and significant and unavoidable at the Royal Palms shaft site and for rehabilitation of the existing ocean outfalls, as described under the CEQA impact determination. Residual impacts during operation would be less than significant.

Impact AES-4. Would Alternative 4 (Project) result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings?

Shaft Site – Royal Palms

Construction

CEQA Analysis

Information from the AutoCAD Civil 3D shadow model for the JWPCP East shaft site was applied to the Royal Palms shaft site and indicates that the noise barrier would cast shadows, but would not affect viewers for the majority of the day. It is not until just before sunset that a longer shadow would be cast across the entry drive and parking lot. This impact would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation of Alternative 4 (Project) would not result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 4 (Project) would not result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AES-5. Would Alternative 4 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?

Shaft Site – Royal Palms

Construction

CEQA Analysis

The noise barrier at the Royal Palms shaft site would introduce a flat, tall, vertical surface that would reflect sunlight and light from street lamps. The surface area of the barrier would increase glare seen by residents and roadway users. Lighting would be used during nighttime construction. Therefore, there would be a minor amount of project-related nighttime light and glare visible over the 20-foot-tall noise barrier if lighting were not directed downward or if a large amount of ambient lighting were used that radiated up and above the noise barrier. Significant impacts would be reduced to less than significant with implementation of MM AES-5a and MM AES-5b.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) would create a new source of substantial light or glare that would adversely affect day or nighttime views of the area. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM AES-5a (same as MM AES-3a) and MM AES-5b.

Residual Impacts

MM AES-5a and MM AES-5b would reduce impacts associated with glare and nighttime lighting at the JWPCP West and Royal Palms shaft sites. Residual impacts during construction would be less than significant.

NEPA Impact Determination

Construction at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) would create a new source of substantial light or glare that would adversely affect day or nighttime views of the area. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM AES-5a (same as MM AES-3a) and MM AES-5b.

Residual Impacts

Residual impacts during construction would be less than significant, as described under the CEQA impact determination.

4.4.6.3 Impact Summary – Alternative 4

As determined in the Preliminary Screening Analysis, all program elements would result in no impacts or less than significant impacts on aesthetic resources; therefore, the program is not evaluated in this EIR/EIS. Impacts on aesthetic resources analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 4-7. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 4-7. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AES-1. Would Alternative 4 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?				
Shaft Site				
Royal Palms	CEQA Significant Impact During Construction	N/A	MM AES-1 (same as MM AES-3a). Implement visual measures to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment. A mural or similar aesthetic treatment will be applied to the sections of the noise barrier prominently visible to nearby residents and/or recreationists. Appropriate paint type and surfacing materials will be selected to ensure durability of the painted or treated surfaces until the barrier is removed. Barriers will have low-sheen and non-reflective surface materials to reduce the potential for glare. The paint color or aesthetic treatment will be maintained and any graffiti will be removed in a timely manner. During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers will be accepted. Their comments will be evaluated for inclusion in the design to ensure the final treatment meets expectations to the greatest extent feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-1 (same as MM AES-3a)	NEPA Significant and Unavoidable Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction

Table 4-7 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AES-3. Would Alternative 4 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?				
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM AES-3a (same as MM AES-1)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-3a (same as MM AES-1)	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM AES-3b. Implement visual measures to reduce the visibility of new structures by painting prominent metal surfaces with colors that will blend with the setting. Selected colors will be shades that are slightly darker than the general surrounding area to reduce contrast and promote compositional harmony of architectural features. An appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces, and the finish will be maintained over time.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM AES-3b	NEPA Less Than Significant Impact During Operation
Royal Palms	CEQA Significant Impact During Construction	N/A	MM AES-3a (same as MM AES-1)	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-3a (same as MM AES-1)	NEPA Significant and Unavoidable Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM AES-3b	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM AES-3b	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction

Table 4-7 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AES-4. Would Alternative 4 (Project) result in an adverse effect due to shading on existing visual character or quality of the site or its surroundings?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact AES-5. Would Alternative 4 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?				
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM AES-5a (same as MM AES-3a) MM AES-5b. Apply minimum lighting standards. Lights will be installed at the lowest practicable height and with the lowest practicable wattage. Lights will be screened and directed downward to the greatest degree possible. The number of nighttime lights will be minimized.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-5a (same as MM AES-3a) MM AES-5b	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Significant Impact During Construction	N/A	MM AES-5a (same as MM AES-3a) MM AES-5b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-5a (same as MM AES-3a) MM AES-5b	NEPA Less Than Significant Impact During Construction

Table 4-7 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

4.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an environmental impact report (EIR) must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the water reclamation plants, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

4.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for the conveyance system, plant expansion at the San Jose Creek Water Reclamation Plant (SJCWRP), WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994). Program elements would result in no impacts or less than significant impacts on aesthetic resources. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A).

4.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. There would be no impacts on aesthetic resources.

4.4.7.3 Impact Summary – Alternative 5

Alternative 5 would result in no impacts on aesthetic resources. As determined in the Preliminary Screening Analysis, the program would result in no impacts or less than significant impacts on aesthetic

resources; therefore, the program is not evaluated in this EIR/EIS. Additionally, there would be no impacts on aesthetic resources for Alternative 5 (Project).

4.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.6 and 4.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

4.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

4.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

4.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Impacts for Alternative 6 would be the same as discussed under Alternative 5 (Project); therefore, there would be no impacts on aesthetic resources for Alternative 6.

4.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on aesthetic resources resulting from the construction and/or operation of program and/or project elements is provided in Table 4-8. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation are also listed in the table.

Table 4-8. Comparison of Significant Impacts and Mitigation for Aesthetic Resources for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 1 (Project)			
Impact AES-1. Would Alternative 1 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?			
Riser/Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction
Impact AES-3. Would Alternative 1 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?			
Shaft Site – JWPCP East	CEQA Significant Impact During Construction	MM AES-3a. Implement visual measures to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment. A mural or similar aesthetic treatment will be applied to the sections of the noise barrier prominently visible to nearby residents and/or recreationists. Appropriate paint type and surfacing materials will be selected to ensure durability of the painted or treated surfaces until the barrier is removed. Barriers will have low-sheen and non-reflective surface materials to reduce the potential for glare. The paint color or aesthetic treatment will be maintained and any graffiti will be removed in a timely manner. During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers will be accepted. Their comments will be evaluated for inclusion in the design to ensure the final treatment meets expectations to the greatest extent feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-3a	NEPA Significant and Unavoidable Impact (Indirect) During Construction
	CEQA Significant Impact During Operation	MM AES-3b. Implement visual measures to reduce the visibility of new structures by painting prominent metal surfaces with colors that will blend with the setting. Selected colors will be shades that are slightly darker than the general surrounding area to reduce contrast and promote compositional harmony of architectural features. An appropriate paint type will be selected for the finished structures to ensure long-term durability of the painted surfaces, and the finish will be maintained over time.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM AES-3b	NEPA Less Than Significant Impact (Indirect) During Operation
Riser/Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction

Table 4-8 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact AES-5. Would Alternative 1 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?			
Shaft Site – JWPCP East	CEQA Significant Impact During Construction	MM AES-5a (same as MM AES-3a) MM AES-5b. Apply minimum lighting standards. Lights will be installed at the lowest practicable height and with the lowest practicable wattage. Lights will be screened and directed downward to the greatest degree possible. The number of nighttime lights will be minimized.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-5a (same as MM AES-3a) MM AES-5b	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 2 (Project)			
Impact AES-1. Would Alternative 2 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?			
Riser/Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction
Impact AES-3. Would Alternative 2 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?			
Shaft Site – JWPCP East	CEQA Significant Impact During Construction	MM AES-3a	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-3a	NEPA Significant and Unavoidable Impact (Indirect) During Construction
	CEQA Significant Impact During Operation	MM AES-3b	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM AES-3b	NEPA Less Than Significant Impact (Indirect) During Operation
Riser/Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction

Table 4-8 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact AES-5. Would Alternative 2 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?			
Shaft Site – JWPCP East	CEQA Significant Impact During Construction	MM AES-5a (same as MM AES-3a) MM AES-5b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-5a (same as MM AES-3a) MM AES-5b	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 3 (Project)			
Impact AES-1. Would Alternative 3 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?			
Shaft Site – Angels Gate	CEQA Significant Impact During Construction	MM AES-1 (same as MM AES-3a)	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-1 (same as MM AES-3a)	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Riser/Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction
Impact AES-3. Would Alternative 3 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?			
Shaft Site – JWPCP West	CEQA Significant Impact During Construction	MM AES-3a	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-3a	NEPA Less Than Significant Impact (Indirect) During Construction
	CEQA Significant Impact During Operation	MM AES-3b	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM AES-3b	NEPA Less Than Significant Impact (Indirect) During Operation
Shaft Site – Angels Gate	CEQA Significant Impact During Construction	MM AES-3a	CEQA Significant and Unavoidable Impact During Construction

Table 4-8 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
	NEPA Significant Impact (Indirect) During Construction	MM AES-3a	NEPA Significant and Unavoidable Impact (Indirect) During Construction
	CEQA Significant Impact During Operation	MM AES-3b	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM AES-3b	NEPA Less Than Significant Impact (Indirect) During Operation
Riser/Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction
Impact AES-5. Would Alternative 3 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?			
Shaft Sites – JWPCP West, Angels Gate	CEQA Significant Impact During Construction	MM AES-5a (same as MM AES-3a) MM AES-5b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-5a (same as MM AES-3a) MM AES-5b	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 4 (Project)			
Impact AES-1. Would Alternative 4 (Project) conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?			
Shaft Site – Royal Palms	CEQA Significant Impact During Construction	MM AES-1 (same as MM AES-3a)	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-1 (same as MM AES-3a)	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Riser/Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction

Table 4-8 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact AES-3. Would Alternative 4 (Project) substantially degrade the existing visual character or quality of the site or its surroundings?			
Shaft Site – JWPCP West	CEQA Significant Impact During Construction	MM AES-3a	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-3a	NEPA Less Than Significant Impact (Indirect) During Construction
	CEQA Significant Impact During Operation	MM AES-3b	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM AES-3b	NEPA Less Than Significant Impact (Indirect) During Operation
Shaft Site – Royal Palms	CEQA Significant Impact During Construction	MM AES-3a	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-3a	NEPA Significant and Unavoidable Impact (Indirect) During Construction
	CEQA Significant Impact During Operation	MM AES-3b	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM AES-3b	NEPA Less Than Significant Impact (Indirect) During Operation
Riser/Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction
Impact AES-5. Would Alternative 4 (Project) create a new source of substantial light or glare that would adversely affect day or nighttime views of the area?			
Shaft Sites – JWPCP West, Royal Palms	CEQA Significant Impact During Construction	MM AES-5a (same as MM AES-3a) MM AES-5b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-5a (same as MM AES-3a) MM AES-5b	NEPA Less Than Significant Impact (Indirect) During Construction

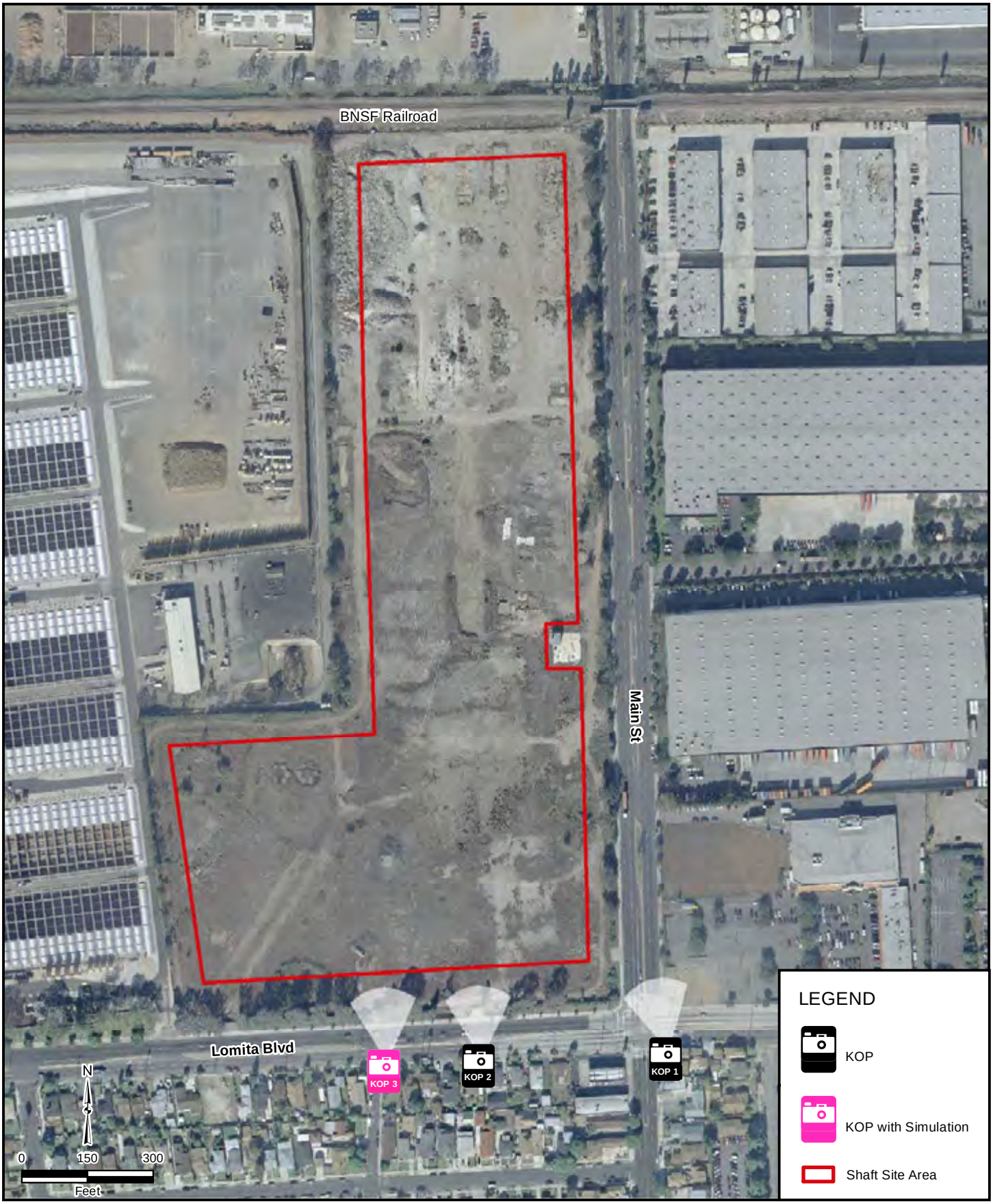


FIGURE 4-1

CLEARWATER Program

JWPCP East Shaft Site
Key Observation Points

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 4-1a

CLEARWATER Program

JWPCP East Shaft Site
Existing Conditions Key Observation Points

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-1b

CLEARWATER Program

JWPCP East Shaft Site
Existing Conditions

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-1c

CLEARWATER Program

JWPCP East Shaft Site
Proposed Sound Barrier Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-1d

CLEARWATER Program

JWPCP East Shaft Site
Post Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

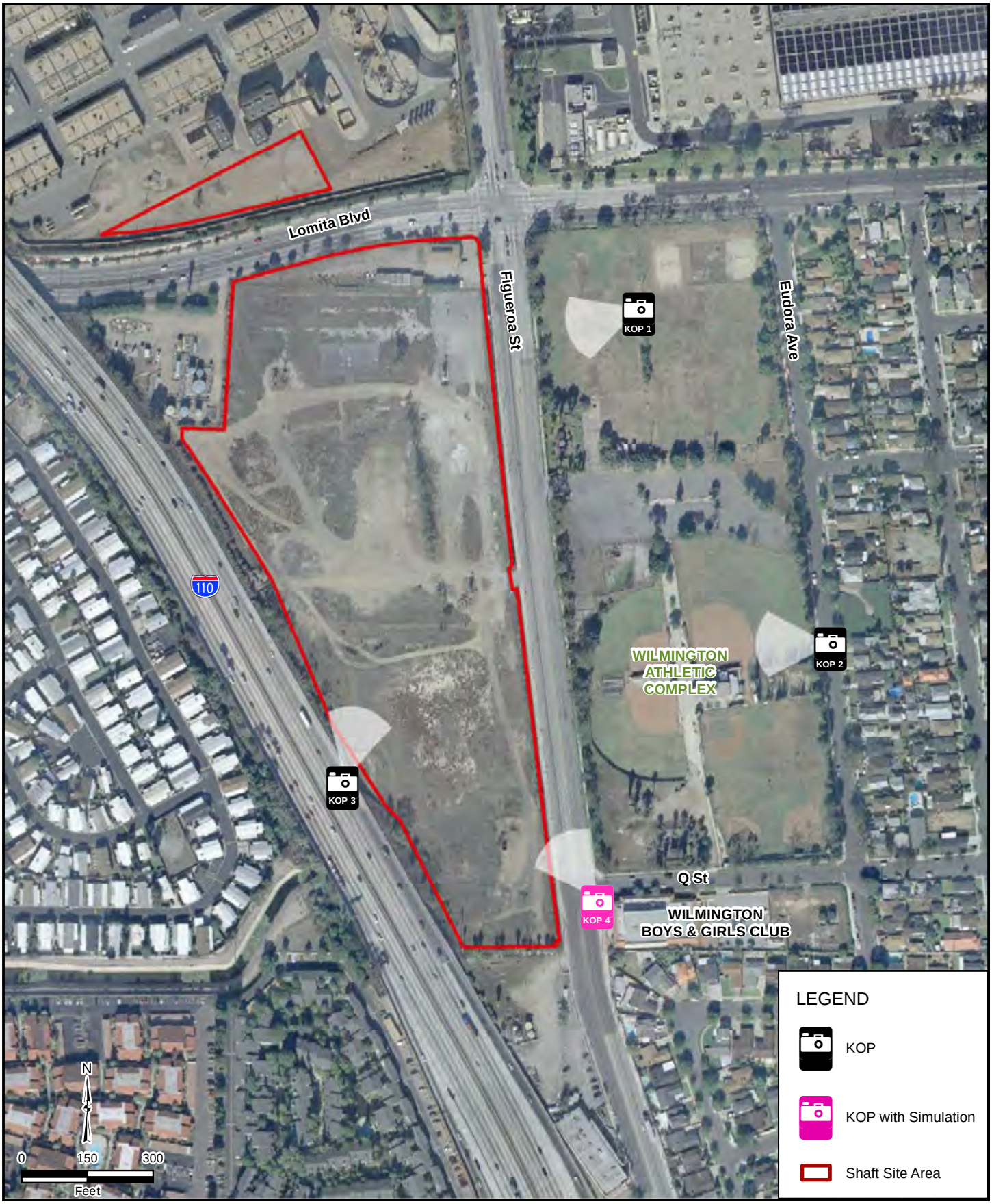


FIGURE 4-2

CLEARWATER Program

JWPCP West Shaft Site
Key Observation Points

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 4-2a

CLEARWATER Program

JWPCP West Shaft Site
Existing Conditions Key Observation Points

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-2b

CLEARWATER Program

JWPCP West Shaft Site
Existing Conditions

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-2c

CLEARWATER Program

JWPCP West Shaft Site
Proposed Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-2d

CLEARWATER Program

JWPCP West Shaft Site
Post Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-3

CLEARWATER Program

Angels Gate Shaft Site and SP Shelf and PV Shelf Riser/Diffuser Areas Key Observation Points

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 4-3a

CLEARWATER Program

Angels Gate Shaft Site
Existing Conditions Key Observation Points

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-3b

CLEARWATER Program

Angels Gate Shaft Site
Existing Conditions

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-3c

CLEARWATER Program

Angels Gate Shaft Site
Proposed Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-3d

CLEARWATER Program

Angels Gate Shaft Site
Post Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-3e

CLEARWATER Program

Angels Gate Shaft Site
Existing Conditions

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-3f

CLEARWATER Program

Angels Gate Shaft Site
Proposed Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-3g

CLEARWATER Program

Angels Gate Shaft Site
Post Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-3h

CLEARWATER Program

SP Shelf Riser/Diffuser Area
Existing Conditions Key Observation Point

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-3i

CLEARWATER Program

PV Shelf Riser/Diffuser Area
Existing Conditions

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-3j

CLEARWATER Program

PV Shelf Riser/Diffuser Area
Proposed Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-4

CLEARWATER Program

Royal Palms Shaft Site and Existing Ocean Outfalls Key Observation Points

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011

FIGURE 4-4a

CLEARWATER Program

Royal Palms Shaft Site
Existing Conditions

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-4b

CLEARWATER Program

Royal Palms Shaft Site
Proposed Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-4c

CLEARWATER Program

Royal Palms Shaft Site
Post Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-4d

CLEARWATER Program

Royal Palms Shaft Site
Existing Conditions

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-4e

CLEARWATER Program

Royal Palms Shaft Site
Proposed Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-4f

CLEARWATER Program

Royal Palms Shaft Site
Post Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-4g

CLEARWATER Program

Royal Palms Shaft Site and Existing Ocean Outfalls
Existing Conditions Key Observation Points

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-4h

CLEARWATER Program

Existing Ocean Outfalls
Existing Conditions

Source: Sanitation Districts of Los Angeles County 2011

FIGURE 4-4i

CLEARWATER Program

Existing Ocean Outfalls
Proposed Project Simulation

Source: Sanitation Districts of Los Angeles County 2011

Chapter 5
AIR QUALITY

5.1 Introduction

This chapter describes the existing setting for ambient air quality, discusses the applicable air quality regulations, analyzes the potential air quality impacts that would result from the construction and operation of the program and project elements, and determines the significance of those impacts. Where feasible, mitigation measures are proposed to reduce these impacts.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the impact analysis for each program element is summarized by alternative in Table 5-1.

Table 5-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	-
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	-	C,O
Process Optimization	X	X	X	X	N/A	N/A	-	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	-	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	-	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	-	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 5-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	-	C,O
Biosolids Management	X	X	X	X	X	N/A	-	O
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project-level. See Table 5-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 5.4.7 for a discussion of the No-Project Alternative.
[b] See Section 5.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element carried forward as a project. The location of the air quality impact analysis for each project element is summarized by alternative in Table 5-2.

Table 5-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	-	C,O
Wilmington to SP Shelf (offshore)	X				N/A	N/A	-	C,O
Wilmington to PV Shelf (onshore)		X			N/A	N/A	-	C,O
Wilmington to PV Shelf (offshore)		X			N/A	N/A	-	C,O
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	-	C,O
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	-	C,O
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	-	C,O
Shaft Sites								
JWPCP East	X	X			N/A	N/A	-	C,O
JWPCP West			X	X	N/A	N/A	-	C,O
TraPac	X	X			N/A	N/A	-	C,O
LAXT	X	X			N/A	N/A	-	C,O
Southwest Marine	X	X			N/A	N/A	-	C,O
Angels Gate			X		N/A	N/A	-	C,O
Royal Palms				X	N/A	N/A	-	C,O

Table 5-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	-	C,O
PV Shelf		X	X		N/A	N/A	-	C,O
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	-	C,O

[a] See Section 5.4.7 for a discussion of the No-Project Alternative.
[b] See Section 5.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation

5.2 Environmental Setting

5.2.1 Regional Setting

With the exception of biosolids management, all program elements would occur within the Joint Outfall System (JOS) service area. The JOS service area is located in the South Coast Air Basin (SCAB), and it includes the JWPCP and six inland water reclamation plants (WRPs). The SCAB consists of the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties and all of Orange County. The air basin covers an area of approximately 6,745 square miles and is bound on the west by the Pacific Ocean; on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains; and on the south by the San Diego County line.

Project elements would be constructed and operated within the SCAB. Depending on the tunnel alignment, onshore project elements would be located between the city of Carson and the Port of Los Angeles, San Pedro, or the Palos Verdes peninsula. As described in Chapter 3, onshore project elements include a tunnel and shaft sites (working, access, and/or exit). Offshore project elements include a tunnel, the existing ocean outfalls, and a riser and diffuser.

Biosolids from the JWPCP would be trucked to other air basins for beneficial reuse applications, such as the San Diego Air Basin (SDAB), the Salton Sea Air Basin (SSAB), and the San Joaquin Valley Air Basin (SJVAB).

5.2.2 Climate and Meteorological Conditions

The SCAB lies within the semipermanent high-pressure zone of the eastern Pacific Ocean. The climate of the region is classified as Mediterranean; the climate is generally characterized by warm, dry summers and mild winters with moderate rainfall. Prevailing daily winds in the region are westerly, with a nighttime return flow. This pattern is typically broken five to ten days a year when strong northeasterly winds, commonly known as “Santa Ana Winds,” sweep down from the desert.

The SCAB’s climate and topography are conducive to the formation of ozone (O_3). The heaviest concentrations of O_3 occur during the summer months when there are warm temperatures, stagnant wind conditions, high solar radiation, and an inversion layer at lower elevations. An inversion layer forms when cooler, denser air is trapped by warmer, lighter air. Sea breezes transport air pollutants to adjacent air basins, such as the Mojave Desert Air Basin and the SSAB. Carbon monoxide (CO) concentrations are highest during the winter, when relatively stagnant air conditions result in an accumulation of this

pollutant. Highest CO concentrations are found near heavily traveled and congested roadways. However, in the case of particulate matter, maximum concentrations may occur during high wind events or near man-made ground-disturbing activities, such as vehicular activities on roads and earth moving during construction activities.

5.2.3 Regional and Localized Air Quality

5.2.3.1 Criteria Pollutants

Air quality is a function of the level of pollution that exists at a given location. Depending on the concentration of these pollutants, public health and welfare can be adversely affected. The United States (U.S.) Environmental Protection Agency (EPA) has set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. These criteria pollutants are O_3, CO, nitrogen dioxide (NO_2), particulate matter less than 10 microns (µm) in diameter (PM_{10}), particulate matter less than 2.5 µm in diameter ($PM_{2.5}$), lead, and sulfur dioxide (SO_2). The NAAQS are expressed in terms of parts per million (ppm) by volume or in micrograms per cubic meter (µg/m^3) of air. California also established ambient air quality standards for criteria pollutants, which are, for the most part, more stringent than the federal standards.

The state and federal ambient air quality standards and the known adverse health effects associated with these criteria pollutants are shown in Table 5-3.

Table 5-3. Ambient Air Quality Standards and Adverse Effects Associated With the Criteria Pollutants

Pollutant	State Standard[a] (Concentration/ Averaging Time)	Federal Primary Standard[b] (Concentration/ Averaging Time)	Adverse Effects
O_3	0.09 ppm (1-hour average) 0.070 ppm (8-hour average)	0.075 ppm (8-hour average)	(a) Pulmonary function decrements and localized lung edema in humans and animals; (b) risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) increased mortality risk; (d) risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) vegetation damage; and (f) property damage.[c]
CO	9.0 ppm (8-hour average) 20 ppm (1-hour average)	9 ppm (8-hour average) 35 ppm (1-hour average)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) impairment of central nervous system functions; and (d) possible increased risk to fetuses.[c]
NO_2	0.18 ppm (1-hour average) 0.030 ppm (annual average)	0.100 ppm (1-hour average) 0.053 ppm (annual average)	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) contribution to atmospheric discoloration.[c]
SO_2	0.04 ppm (24-hour average) 0.25 ppm (1-hour average)	0.03 ppm (annual arithmetic mean) 0.05 ppm (3-hour average) 0.14 ppm (24-hour) 0.075 ppm (1-hour average)	(a) Broncho-constriction accompanied by symptoms that may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma.[c]

Table 5-3 (Continued)

Pollutant	State Standard[a] (Concentration/ Averaging Time)	Federal Primary Standard[b] (Concentration/ Averaging Time)	Adverse Effects
PM_{10}	20 µg/m^3 (annual arithmetic mean) 50 µg/m^3 (24-hour average)	150 µg/m^3 (24-hour average)	(a) Excess deaths from short-term and long-term exposures; (b) excess seasonal declines in pulmonary function, especially in children; (c) asthma exacerbation and possibly induction; (d) adverse birth outcomes including low birth weight; (e) increased infant mortality; (f) increased respiratory symptoms in children such as cough and bronchitis; and (g) increased hospitalization for both cardiovascular and respiratory disease (including asthma).[c]
$PM_{2.5}$	12 µg/m^3 (annual arithmetic mean)	15 µg/m^3 (annual arithmetic mean) 35 µg/m^3 (24-hour average)	
Lead	1.5 µg/m^3 (30-day average)	1.5 µg/m^3 (quarterly average) 0.15 µg/m^3 (rolling 3-month average)	(a) Learning disabilities; (b) impairment of blood formation and nerve conduction.[c]
Sulfates	25 µg/m^3 (24-hour average)	N/A	(a) Decrease in ventilatory function; (b) aggravation of asthmatic symptoms; (c) aggravation of cardiopulmonary disease; (d) vegetation damage; (e) degradation of visibility; and (f) property damage.[c]
Hydrogen Sulfide	0.03 ppm (1-hr average)	N/A	Odor annoyance above 10 ppm; irritant and toxic inhalant above 50 ppm; immediately dangerous to life and health above 300 ppm.[d]

Lead emissions were not evaluated in this assessment. Lead is not a chemical of concern for activities associated with the program and project.

CAAQSs have also been established for vinyl chloride and visibility reducing particles. They are not shown in this table because they are not pollutants of concern for the program or project.

A CAAQS of 0.03 ppm has been established for hydrogen sulfide. Hydrogen sulfide is associated with temporary nuisance odors from municipal wastewater systems. The Sanitation Districts maintain comprehensive odor control systems at all facilities and use chemical treatment programs to minimize odors from wastewater conveyance systems (see Sections 5.4.1.2 and 5.4.1.3). Additionally, the Sanitation Districts have a community relations program in place to help determine the source of any offsite odors. This includes a 24-hour odor complaint hotline where complaints are immediately responded to by staff.

California standards for O_3, CO, SO_2, NO_2, and suspended particulate matter (PM_{10} and $PM_{2.5}$) are values that are not to be exceeded. All others are not to be equaled or exceeded.

National standards (other than O_3, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in 1 year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[a] Source: CARB 2010a

[b] Source: EPA 2010a

[c] Source: SCAQMD 2007a:Table 2-1

[d] Source: OSHA 2011

N/A = not applicable

Of the criteria pollutants of concern, O_3 is unique because it is not directly emitted from project-related sources. Rather, O_3 is a secondary pollutant, formed from the precursor pollutants volatile organic compounds (VOC) and nitrogen oxides (NO_X). VOC and NO_X react to form O_3 in the presence of sunlight through a complex series of photochemical reactions. As a result, unlike inert pollutants, O_3 levels usually peak several hours after the precursors are emitted and many miles downwind of the source. Because of the complexity and uncertainty in predicting photochemical pollutant concentrations, O_3 impacts are assessed indirectly by comparing VOC and NO_X emissions to the daily emission thresholds set by the South Coast Air Quality Management District (SCAQMD). These emission thresholds are discussed in Section 5.4.2.

5.2.3.2 Toxic Air Contaminants

Toxic air contaminants (TACs) are non-criteria pollutants that can result in adverse human health effects, including carcinogenic effects, after short-term (acute) or long-term (chronic) exposure. The California Office of Environmental Health Hazard Assessment provides toxicity information on TACs, which, in turn, is used by air districts in estimating the carcinogenic and other risks posed by stationary sources.

According to SCAQMD's Multiple Air Toxics Exposure Study (MATES) III study (SCAQMD 2008a) on TACs, diesel particulate matter (DPM) accounts for approximately 84 percent of the total carcinogenic risk in the SCAB. The MATES III study (SCAQMD 2008a) also found that the carcinogenic risk posed by TACs is very high for areas surrounding the Port of Los Angeles (SCAQMD 2008a). In recognition of the carcinogenic risk identified in the MATES III study, the Sanitation Districts of Los Angeles County (Sanitation Districts) will go beyond the existing requirements and use, where feasible, the cleanest EPA Tier diesel engine commercially available in the SCAB at the start of construction for work in the Port of Los Angeles.

5.2.3.3 Secondary $PM_{2.5}$ Formation

Within the SCAB, $PM_{2.5}$ particles are directly emitted into the atmosphere (i.e., primary particles) and are formed through atmospheric chemical reactions from precursor gases (i.e., secondary particles). Primary $PM_{2.5}$ includes diesel soot, combustion products, road dust, and other fine particles. Secondary $PM_{2.5}$ is formed from reactions with directly emitted NO_X, sulfur oxides (SO_X), VOCs, and ammonia some distance downwind of the emission sources. However, the air quality analysis in this EIR/EIS focuses on the effects of direct $PM_{2.5}$ emissions and their ambient impacts. This approach is consistent with the recommendations of the SCAQMD (SCAQMD 2006).

5.2.3.4 Ambient Air Monitoring Stations

All program and project elements would be located within the SCAB. The SCAQMD maintains a network of pollutant monitoring stations throughout the SCAB and the Los Angeles Harbor Department (LAHD) maintains similar stations within and in the vicinity of the Port of Los Angeles as shown in Figure 5-1. These monitoring stations collect real-time measurements of ambient-level pollutants. The data generated are used to define the nature and severity of pollution, determine which areas of Southern California are in attainment or nonattainment, identify pollution trends in the region, and develop air models and emission inventories.
Certain project elements could be located within the Port of Los Angeles, depending on the alternative selected and built. The LAHD has conducted an air quality monitoring program since February 2005. The main objective of the program is to estimate ambient levels of DPM near the Port of Los Angeles. The secondary objective of the program is to estimate ambient particulate matter (PM) levels within adjacent communities due to port emissions. To achieve these objectives, the program measures ambient concentrations of PM_{10}, $PM_{2.5}$, and elemental carbon $PM_{2.5}$ (which indicates fossil fuel combustion sources) at four locations in the port vicinity. SCAQMD air quality monitoring station locations in the Sanitation Districts' service area and near the project vicinity and pollutant concentrations over a 3-year period are shown in Table 5-4. Peak concentrations for 2008 at the LAHD air quality monitoring stations (see Figure 5-1) are shown in Table 5-5.

It is important to note that there are no thresholds, standards, limitations, or requirements triggered by the ambient air monitoring in the Port of Los Angeles. The SCAQMD has regulatory jurisdiction over the Port of Los Angeles.

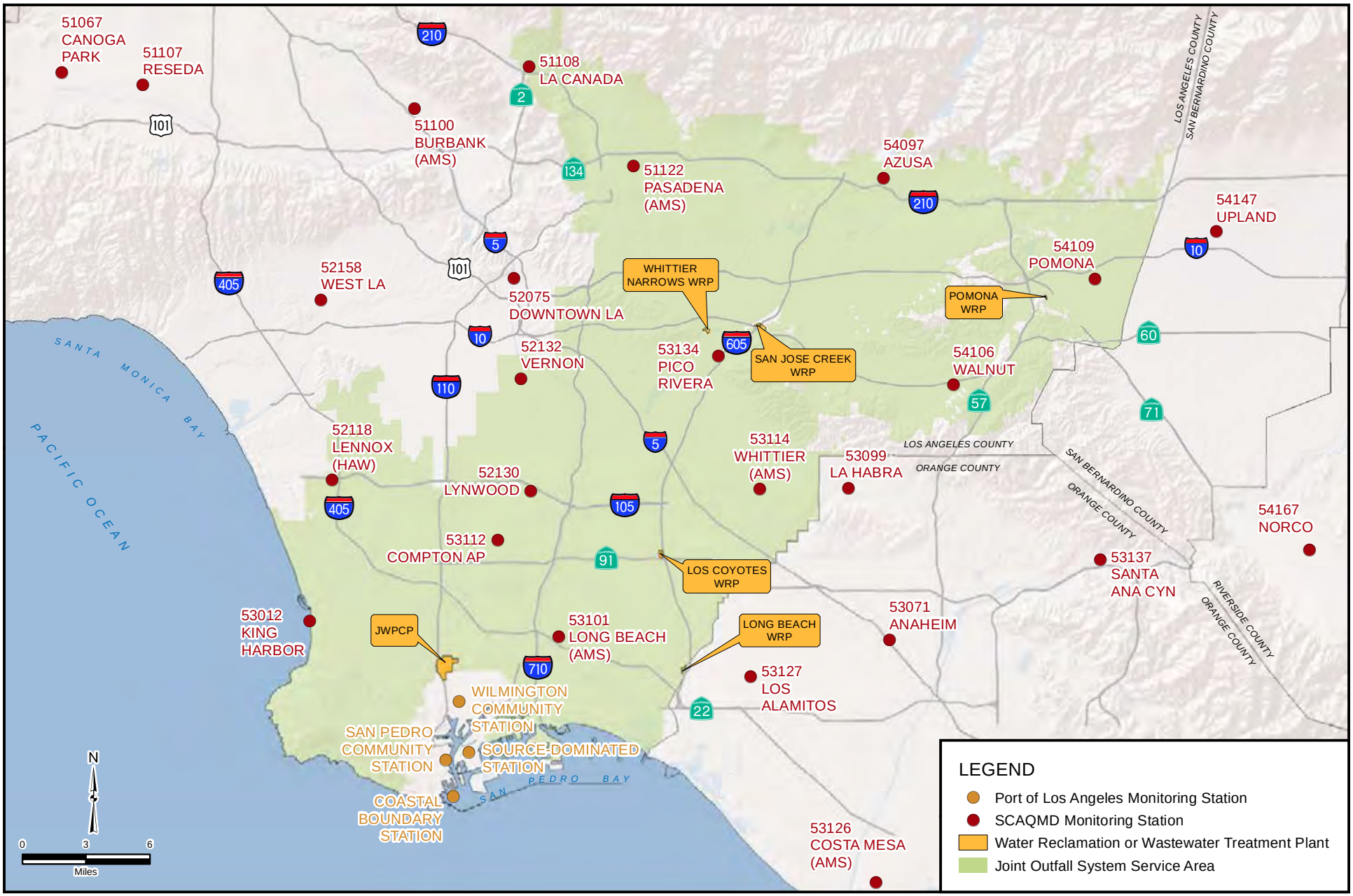


FIGURE 5-1

CLEARWATER Program

Air Quality Monitoring Stations in Southern California

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011, Port of Los Angeles 2011, SCAQMD 2011, Thomas Bros 2011

Table 5-4. Peak 3-Year Pollutant Concentrations at Air Quality Monitoring Stations in the Program and Project Vicinity

				Stations Near Program Elements			Stations Near Project Elements
Pollutant	**Averaging Period**	**National Standard**	**State Standard**	**Pico Rivera[a]**	**Azusa[b]**	**Pomona[c]**	**North Long Beach[d]**
2007							
O_3 (ppm)	1 hour	N/A	0.09[g]	0.135	0.158	0.153	0.099
	8 hours	0.084	0.070	**0.100**	**0.112**	**0.108**	**0.073**
CO (ppm)	1 hour	35	20	5	3	3	3
	8 hours	9	9.0	2.9	1.8	2.0	2.6
NO_2 (ppm)	1 hour	0.100[e,g]	0.25	0.11	0.12	0.10	0.11
	annual	0.053	N/A	0.025	0.025	0.032	0.021
SO_2 (ppm)	1 hour	0.075[f,g]	0.25	N/A	N/A	N/A	0.11
	24 hours	0.14	0.04	N/A	N/A	N/A	0.011
	annual	0.03	N/A	N/A	N/A	N/A	0.0027
PM_{10} ($\mu g/m^3$)	24 hours	150[g]	50[g]	N/A	83	N/A	75
	annual	N/A	20	N/A	**35.6**	N/A	**30.2**
$PM_{2.5}$ ($\mu g/m^3$)	24 hours	35[g]	N/A	63.6	63.8	N/A	82.9
	annual	15	12	**16.7**	**15.9**	N/A	**14.6**
2008							
O_3 (ppm)	1 hour	N/A	0.09[g]	0.107	0.135	0.141	0.093
	8 hours	0.075	0.070	**0.093**	**0.111**	**0.111**	**0.074**
CO (ppm)	1 hour	35	20	3	2	3	3
	8 hours	9	9.0	2.1	1.6	2.0	2.6
NO_2 (ppm)	1 hour	0.100[e,g]	0.18	0.10	0.10	0.11	0.13
	annual	0.053	0.030	0.026	0.023	0.030	0.021
SO_2 (ppm)	1 hour	0.075[f]	0.25	N/A	N/A	N/A	0.09
	24 hours	0.14	0.04	N/A	N/A	N/A	0.012
	annual	0.03	N/A	N/A	N/A	N/A	0.0022
PM_{10} ($\mu g/m^3$)	24 hours	150[g]	50[g]	N/A	98	N/A	62
	annual	N/A	20	N/A	**35.3**	N/A	**29.1**
$PM_{2.5}$ ($\mu g/m^3$)	24 hours	35[g]	N/A	47.3	53.1	N/A	57.2
	annual	15	12	15.0	14.1	N/A	14.2
2009							
O_3 (ppm)	1 hour	N/A	0.09[g]	0.131	0.150	0.138	0.089
	8 hours	0.075	0.070	**0.101**	**0.107**	**0.099**	0.068
CO (ppm)	1 hour	35	20	3	3	3	3
	8 hours	9	9.0	2.1	1.7	1.8	2.2
NO_2 (ppm)	1 hour	0.100[e,g]	0.18	0.10	0.10	0.1	0.11
	annual	0.053	0.030	0.026	0.019	0.027	0.021

Table 5-4 (Continued)

Pollutant	Averaging Period	National Standard	State Standard	Stations Near Program Elements			Stations Near Project Elements
				Pico Rivera[a]	Azusa[b]	Pomona[c]	North Long Beach[d]
SO_2 (ppm)	1 hour	0.075[f]	0.25	N/A	N/A	N/A	0.02
	24 hours	0.14	0.04	N/A	N/A	N/A	0.05
PM_{10} ($\mu g/m^3$)	24 hours	150[g]	50[g]	N/A	74	N/A	62
	annual	N/A	20	N/A	**32**	N/A	**30.5**
$PM_{2.5}$ ($\mu g/m^3$)	24 hours	35[g]	N/A	71.1	72.1	N/A	63.4
	annual	15	12	**14.8**	**12.8**	N/A	**13.0**

The years 2007–2009 represent the latest available monitoring data for SCAQMD monitoring stations.

Exceedances of the standards are highlighted in **bold**.

[a] Pico Rivera (ARB Station No.70185) is representative of the ambient air quality at the LCWRP. The station is located 9 miles from the LCWRP.

[b] Azusa (ARB Station No.70060) is representative of the ambient air quality at the SJCWRP. The station is located 9 miles from the SJCWRP.

[c] Pomona (ARB Station No.70075) is representative of the ambient air quality at the POWRP. The station is located 2.5 miles from the POWRP.

[d] North Long Beach (ARB Station No.70072) is also representative of the ambient air quality at the JWPCP and LBWRP; station is located near the Ports of Long Beach and Los Angeles. The station is located 5 miles from the JWPCP and 6 miles from the LBWRP.

[e] EPA has established a new NO_2 1-hour standard of 100 ppb (0.100 ppm), effective April 7, 2010.

[f] EPA has revised the federal standard by establishing a new SO_2 1-hour standard of 0.075 ppm and revoking the existing annual (0.03 ppm) and 24-hour (0.14 ppm) SO_2 standards, effective August 2, 2010.

[g] Current standard as of 2010; standard information in 2007–2009 was not available. Exceedances are not compared to this 2010 standard.

N/A = not applicable; pollutants not monitored at these stations

Source: SCAQMD 2011a

Table 5-5. Peak Pollutant Concentrations for 2008 at Port of Los Angeles Air Quality Monitoring Stations

Pollutant	Averaging Period	Port of Los Angeles Monitoring Stations			
		Wilmington Community Station	Coastal Boundary Station	San Pedro Station	Source-Dominated Station
PM_{10} ($\mu g/m^3$)	24 hours	30.6	24.0	N/A	N/A
	12-month average	25.8	N/A	N/A	N/A
$PM_{2.5}$ ($\mu g/m^3$)	24 hours	12.0	11.4	14.9	14.2
	12-month average	9.1	9.1	11.3	11.2
Elemental carbon $PM_{2.5}$ ($\mu g/m^3$)	24 hours	1.7	1.7	2.0	3.0
	12-month average	0.9	0.8	1.2	1.9

N/A = not applicable; PM_{10} is not measured at the San Pedro or Source-Dominated Stations. PM_{10} was not measured at the Coastal Boundary Station in 2008.

Source: LAHD 2010

5.2.3.5 Prevailing Winds

Winds can affect the dispersion of odors and emissions. Data from nearby meteorological stations were used to identify the prevailing wind direction at each of the WRPs and the JWPCP. The data is presented in the form of a wind rose, which shows speed and direction on the same graph. Meteorological stations were chosen based on their proximity to the project sites. It is important to note that meteorological stations are different than monitoring stations discussed in Section 5.2.3.4. Whereas monitoring stations gather ambient pollutant information, meteorological stations gather information such as wind direction, wind speed, etc. Monitoring and meteorological stations are often, but not always, located in the same geographical vicinity. The wind rose from the Pomona meteorological station, shown in Figure 5-2, was used to represent wind patterns at the Pomona Water Reclamation Plant (POWRP) and the San Jose Creek Water Reclamation Plant (SJCWRP) because of the proximity of these facilities to one another. The wind rose from the Lynwood meteorological station, shown in Figure 5-3, was used to represent wind patterns at the Los Coyotes Water Reclamation Plant (LCWRP). Based on the proximity of both the JWPCP and the Long Beach Water Reclamation Plant (LBWRP) to each other, the wind rose from the Long Beach meteorological station (Figure 5-4) was used to represent wind patterns at both the JWPCP and the LBWRP.

The predominant wind direction and speed at the three stations is as follows: at the Pomona station, from the northwest-west at 3.87 feet per second (ft/s) (1.18 meters per second [m/s]); at the Lynwood station, from the west-southwest at 3.80 ft/s (1.16 m/s); and at the Long Beach station, from the west at 6.03 ft/s (1.84 m/s).

5.2.3.6 Sensitive Receptors

The impact of air emissions on sensitive members of the population is a special concern. Sensitive members of the population include those that may be more negatively affected by poor air quality than other members of the population, such as children, the elderly, or the infirm. Schools, hospitals, and convalescent homes are considered sensitive land uses because children, the elderly, and the infirm are more susceptible to respiratory distress and other air-quality-related health problems than the general public.

5.2.4 Program Setting

The program elements described in Chapter 3, as they pertain to air quality considerations, are summarized in Table 5-6. The potential emissions sources that could result from the program elements, and the methodology in which they are analyzed, are further discussed in Section 5.4.1.

Table 5-6. Summary of Program Elements

Program Element	Existing Condition	Proposed Changes
Water Reclamation Plants		
SJCWRP – Plant Expansion	Treatment of wastewater and nutrient removal with a NDN process	25 MGD expansion of treatment capacity
Process Optimization		Process optimization by installing a 15–35 MG flow equalization tank
POWRP – Process Optimization	Treatment of wastewater and nutrient removal with a NDN process	Process optimization by installing a 2–3 MG flow equalization tank
LCWRP – Process Optimization	Treatment of wastewater and nutrient removal with a NDN process	Process optimization by installing a 4–8 MG flow equalization tank

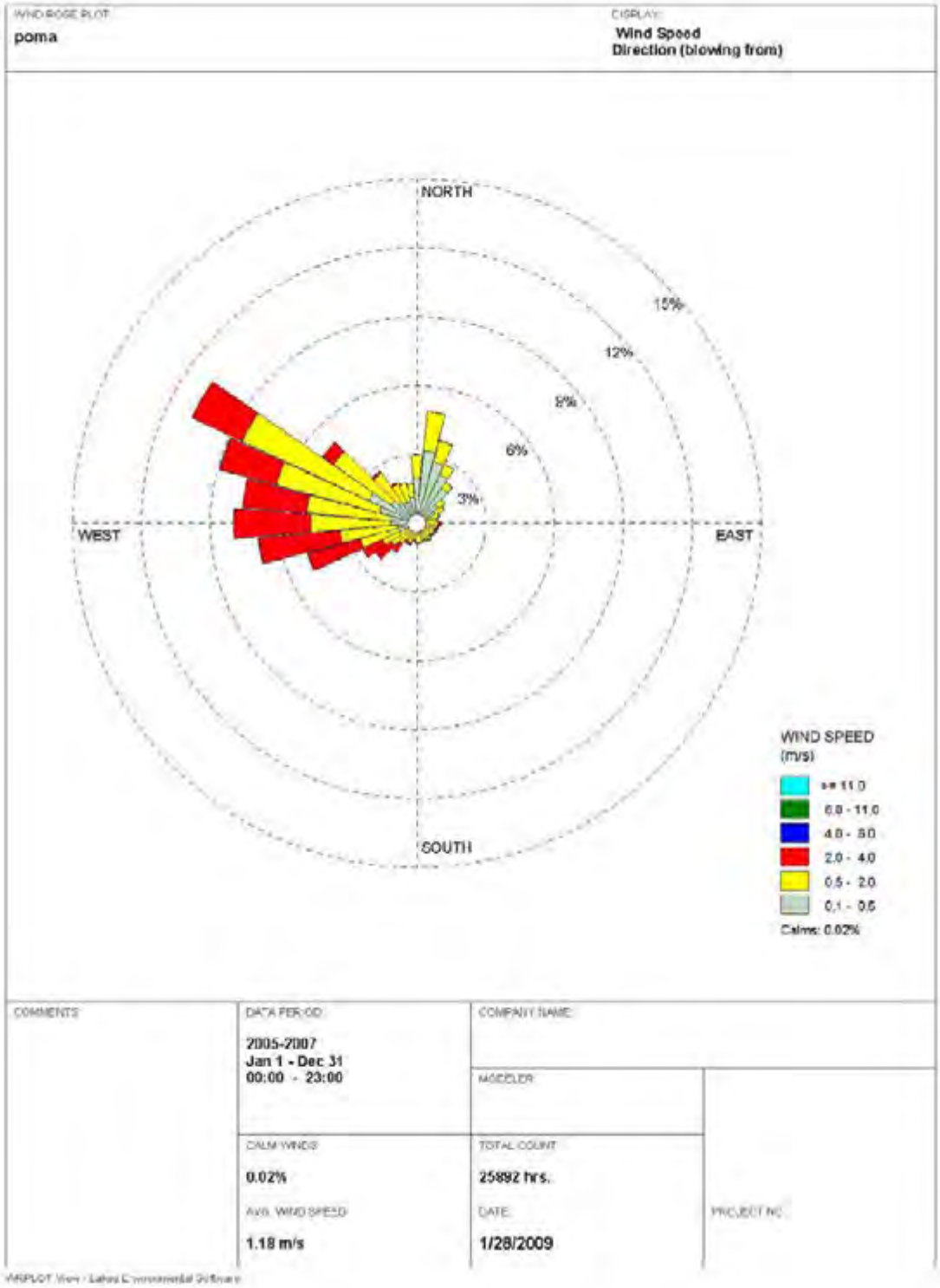


FIGURE 5-2

Prevailing Wind Direction at the Pomona Meteorological Station

Source: SCAQMD 2009d

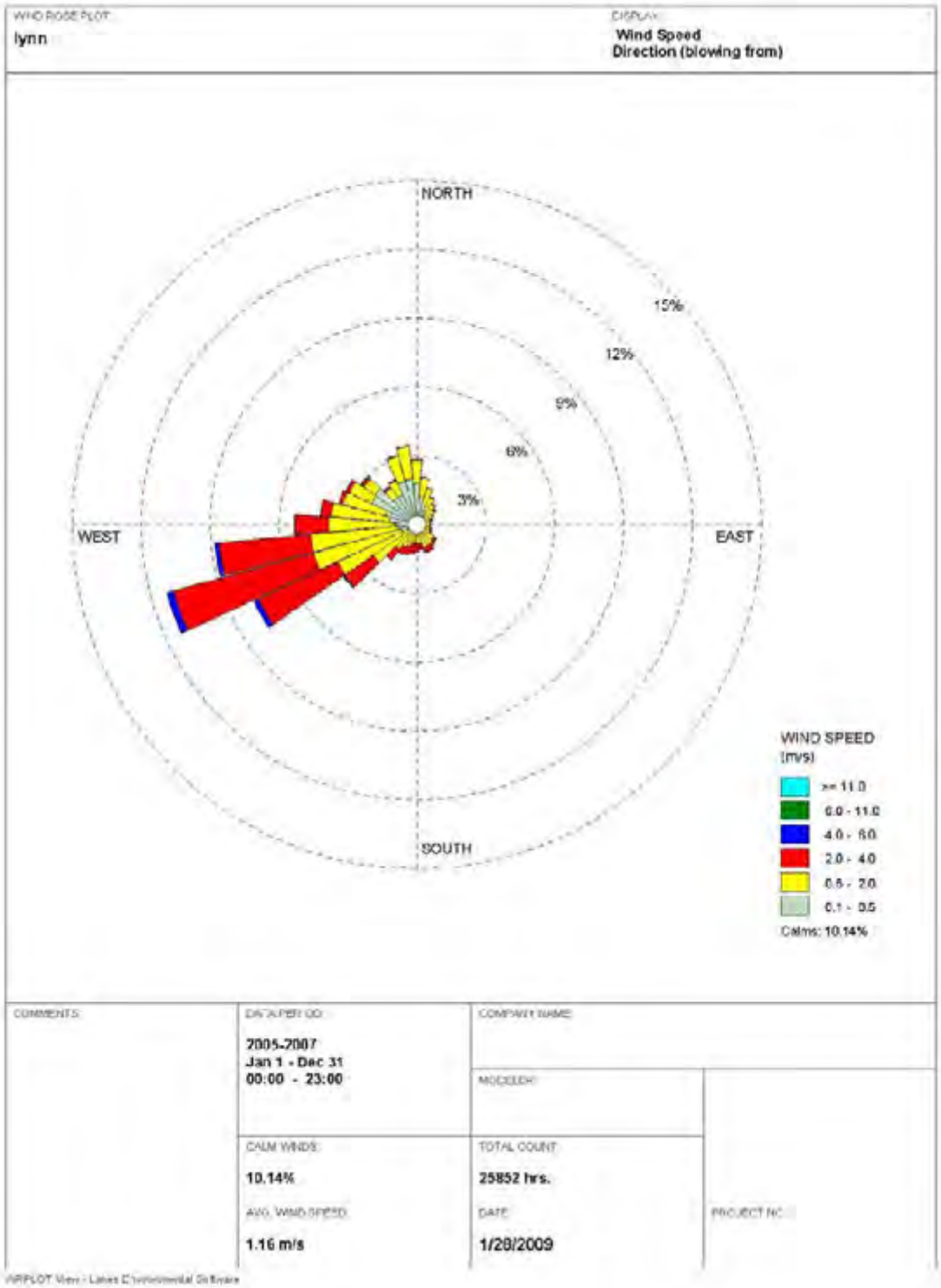


FIGURE 5-3

Prevailing Wind Direction at the Lynwood Meteorological Station

Source: SCAQMD 2009d

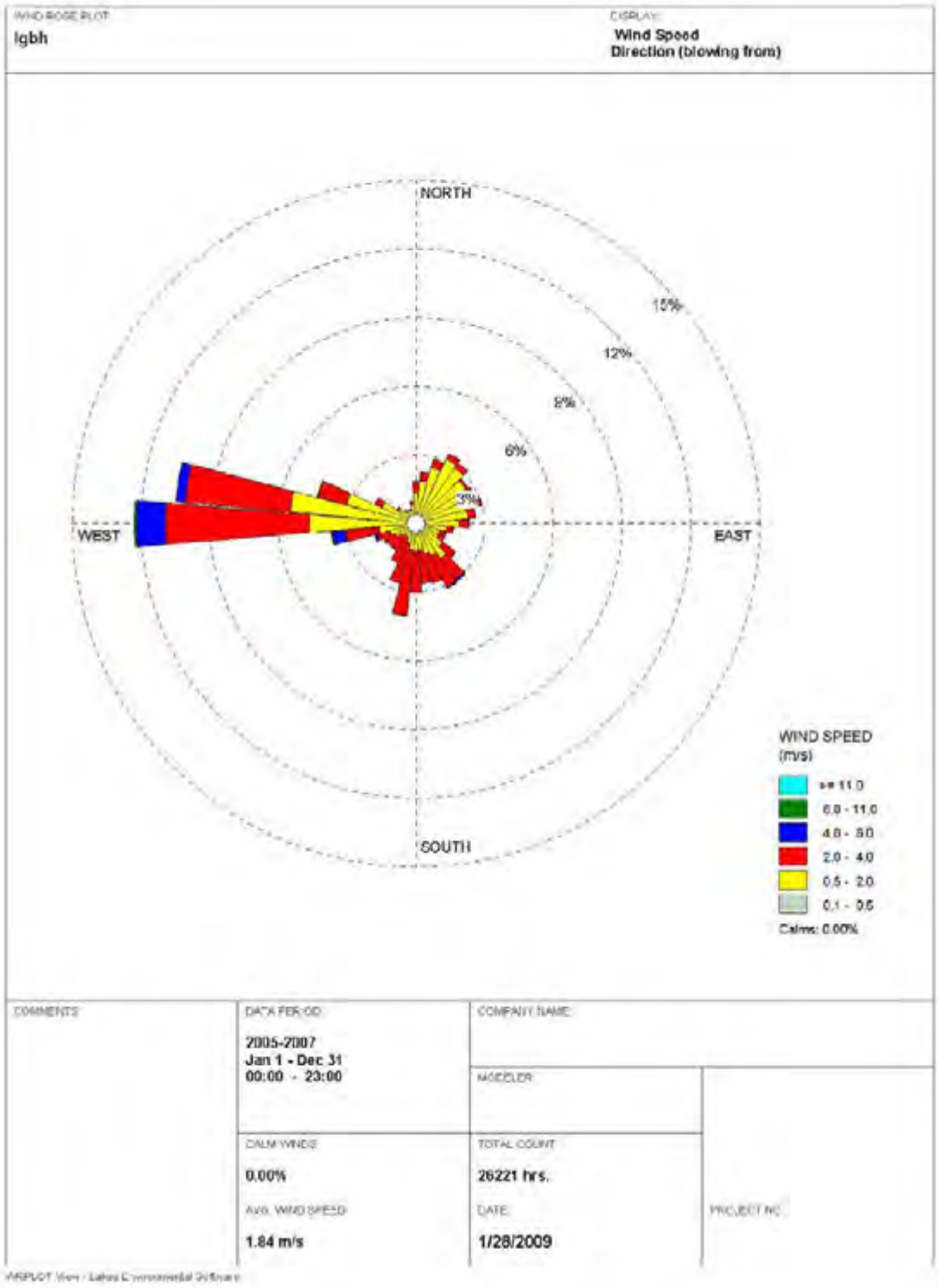


FIGURE 5-4

Prevailing Wind Direction at the Long Beach Meteorological Station

Source: SCAQMD 2009d

Table 5-6 (Continued)

Program Element	Existing Condition	Proposed Changes
Water Reclamation Plants		
LBWRP – Process Optimization	Treatment of wastewater and nutrient removal with a NDN process	Process optimization by installing a 3–5 MG flow equalization tank
Joint Water Pollution Control Plant		
Solids Processing	Consists of dissolved air flotation thickeners, anaerobic digesters, and centrifuges	6 new digesters
Biosolids Management	Hauling of treated and dewatered biosolids to remote locations for beneficial reuse applications	Additional 20 truck trips per day

NDN = nitrification/denitrification
MGD = million gallons per day
MG = million gallons

5.2.5 Project Setting

The proposed project elements are summarized in Table 5-7. The proposed project consists of the construction and operation of a new or modified ocean discharge system for secondary effluent from the JWPCP. Alternatives 1, 2, and 3 would include a tunnel, working and access shafts, and a riser and diffuser. Alternative 4 would include a tunnel, working and exit shafts, and use of the existing ocean outfalls. All the alternatives would include the rehabilitation of the existing ocean outfalls. The potential emissions sources that could result from the project elements, and the methodology in which they are analyzed, are further discussed in Section 5.4.1.

Table 5-7. Summary of Project Elements

Functional Category	Project Element	Construction Emission Sources
Alternative 1		
Tunnel Alignment	Wilmington to SP Shelf (Onshore and Offshore)	TBM is electric. No direct emissions Off-road construction equipment On-road heavy-duty vehicles Worker commute Fugitive dust Locomotive (small mining-type) to convey excavated material and personnel in rail cars
Shaft Site	JWPCP East TraPac LAXT Southwest Marine	Off-road construction equipment On-road heavy-duty vehicles Worker commute Fugitive dust Locomotive emissions during tunneling
Riser/Diffuser Area	SP Shelf	Tugboats, crewboats, and barges Off-road diesel equipment Worker commute
	Existing Ocean Outfalls	Tugboat and crewboats Worker commute

Table 5-7 (Continued)

Functional Category	Project Element	Construction Emission Sources
Alternative 2		
Tunnel Alignment	Wilmington to PV Shelf (Onshore and Offshore)	TBM is electric. No direct emissions Off-road construction equipment. On-road heavy-duty vehicles Worker commute Fugitive dust Locomotive (small mining-type) to convey excavated material in rail cars and personnel
Shaft Site	JWPCP East TraPac LAXT Southwest Marine	Off-road construction equipment On-road heavy-duty vehicles Worker commute Fugitive dust Locomotive emissions during tunnel
Riser/Diffuser Area	PV Shelf	Tugboats and crewboats Worker commute
	Existing Ocean Outfalls	Tugboat and crewboats Worker commute
Alternative 3		
Tunnel Alignment	Figueroa/Gaffey to PV Shelf (Onshore and Offshore)	TBM is electric. No direct emissions Off-road construction equipment On-road heavy-duty vehicles Worker commute Fugitive dust Locomotive (small mining-type) to convey excavated material in rail cars and personnel
Shaft Site	JWPCP West Angels Gate	Off-road construction equipment On-road heavy-duty vehicles Worker commute Fugitive dust Locomotive emissions during tunnel
Riser/Diffuser Area	PV Shelf	Tugboats, crewboats, and barges Off-road diesel equipment Worker commute
	Existing Ocean Outfalls	Tugboats and crewboats Worker commute
Alternative 4		
Tunnel Alignment	Figueroa/Western to Royal Palms (Onshore)	TBM is electric. No direct emissions Off-road construction equipment On-road heavy-duty vehicles Worker commute Fugitive dust Locomotive (small mining-type) to convey excavated material in rail cars and personnel
Shaft Site	JWPCP West Royal Palms	Off-road construction equipment On-road heavy-duty vehicles Worker commute Fugitive dust Locomotive emissions during tunnel
Riser/Diffuser Area	Existing Ocean Outfalls	Tugboats and crewboats Worker commute

TBM = tunnel boring machine

5.3 Regulatory Setting

The federal Clean Air Act (CAA) and its subsequent amendments established air quality regulations and the NAAQS, and delegated enforcement of these standards to the states. In California, the California Air Resources Board (CARB) is responsible for enforcing air pollution regulations. CARB has, in turn, delegated the responsibility of regulating stationary emission sources to the local air agencies. In the SCAB, the local regulatory air agency is the SCAQMD.

The following is a summary of the key federal, state, regional, and local air quality rules, policies, and agreements that apply to the program and project.

5.3.1 Federal

5.3.1.1 State Implementation Plan

The CAA requires that states prepare a state implementation plan that details how the federally designated nonattainment areas will achieve the NAAQS. In California, each air district prepares an air quality management plan (AQMP) to incorporate into the State Implementation Plan. SCAQMD developed the 2007 AQMP for inclusion into the State Implementation Plan.

The 2007 AQMP addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, updated ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP builds upon the approaches taken in the 2003 AQMP for the SCAB for the attainment of federal air quality standards. The AQMP highlights the necessary reductions and the need to identify additional strategies, especially in the area of mobile sources, to meet federal criteria pollutant standards within the timeframes allowed under the federal CAA (SCAQMD 2007a).

The SCAQMD developed the 2007 AQMP in cooperation with the Southern California Association of Governments (SCAG), CARB, and EPA, particularly in demonstrating compliance with the new NAAQS for $PM_{2.5}$ and 8-hour O_3 and other planning requirements, including compliance with the NAAQS for PM_{10} (SCAQMD 2007a). The SCAG separately prepared a Regional Comprehensive Plan for the Southern California area. It includes chapters on Growth Management and Regional Mobility, which were the basis for air quality forecasts in the AQMP related to land use and transportation, and SCAQMD's consistency analysis.

5.3.1.2 Environmental Protection Agency Off-Road Diesel Engine Rule

To reduce emissions from off-road diesel equipment, the EPA established a series of increasingly strict emission standards for new engines. Locomotives and marine vessels are exempt from this rule. Manufacturers of off-road diesel engines would be required to produce engines with certain emission standards under the following compliance schedule:

- Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category.
- Tier 2 standards were phased in from 2001 to 2006.
- Tier 3 standards were phased in from 2006 to 2008.
- Tier 4 standards, which likely will require add-on emissions control equipment to attain them, will be phased in from 2008 to 2015.

The various EPA emission standards for new off-road engines are summarized in Table 5-8 (SCAQMD 2010a).

Table 5-8. EPA Emission Standards for Off-Road Engines

Tier	Emissions Standard 75–99 hp Engines (g/bhp-hr)	Emissions Standard 100–174 hp Engines (g/bhp-hr)	Emissions Standard 175–299 hp Engines (g/bhp-hr)	Emissions Standard 300–600 hp Engines (g/bhp-hr)
1				
NO_X	6.9	6.9	6.9	6.9
ROG	1.19	0.82	1	1
PM	0.552	0.304	0.4	0.4
2				
NO_X	5.32	4.655	4.655	4.56
ROG	0.28	0.245	0.245	0.24
PM	0.3	0.22	0.15	0.15
3				
NO_X	3.325	2.85	2.85	2.85
ROG	0.175	0.15	0.15	0.15
PM	0.3	0.22	0.15	0.15
4				
NO_X	0.3 (Final effective 1/1/15)[a]	0.3 (Final effective 1/1/15)[a]	0.3 (Final effective 1/1/15)[b]	0.3 (Final effective 1/1/15)[b]
ROG	0.14	0.14	0.14	0.14
PM	0.015	0.015	0.015	0.015

[a] Tier 4 interim NO_X standard of 2.5g/bhp-hr ends 12/31/14.
[b] Tier 4 interim NO_X standard of 1.5g/bhp-hr ends 12/31/14.
hp = horsepower
g/bhp-hr = grams per brake horsepower-hour
NO_X = nitrogen oxides
ROG = reactive organic gases
PM = particulate matter
Source: SCAQMD 2010a

5.3.1.3 Environmental Protection Agency On-Road Diesel Engine Rule

In 2007, the EPA promulgated the Heavy-Duty Highway Rule, which reduces emissions from on-road, heavy-duty diesel trucks by establishing a series of increasingly strict emission standards for new engines. Manufacturers are required to produce new diesel vehicles that meet PM and NO_X emission standards beginning with model year 2007.

5.3.1.4 Environmental Protection Agency Marine Diesel Engine Rule

For the purpose of emission regulations, marine engines are divided into three categories based on displacement per cylinder, as shown in Table 5-9. Each of the categories represents a different engine technology. Categories 1 and 2 are further divided into subcategories, depending on displacement and net power output.

Table 5-9. Marine Engine Categories

Category	Displacement per Cylinder (D)	Basic Engine Technology	Type of Vessels	Range in Engine Size
1	Subcategory 1–2: D < 5 dm^3 and power > 37 kW Subcategory 3–4: D < 7 dm^3	Land-based non-road diesel	Tugboats, pushboats, fishing vessels, commercial vessels in and around ports, and supply vessels	500 to 8,000 kW (700 to 11,000 hp)
2	Subcategory 1–2: 5 dm^3 < D < 30 dm^3 Subcategory 3–4: 7 dm^3 < D < 30 dm^3	Locomotive diesel	Same as above	500 to 8,000 kW (700 to 11,000 hp)
3	D > 30 dm^3	Unique marine engine design	Container ships, oil tankers, bulk carriers, and cruise ships	2,500 to 70,000 kW (3,000 to 100,000 hp)

dm^3 = cubic decimeters
kW = kilowatts
Source: DieselNet 2011

Program elements would not use marine diesel engines. Project elements would utilize Category 1 or 2 marine diesel engines for in-water work. Category 3 vessels would not be used for the project elements.

On March 14, 2008, the EPA signed a regulation to introduce Tier 3 and Tier 4 emission standards to new or rebuilt Category 1 and Category 2 marine diesel engines. Tier 3 standards apply to new engines used in commercial, recreation, and auxiliary power applications beginning in 2009 for Category 1 engines and in 2013 for Category 2 engines. Tier 4 standards apply to new Category 1 and 2 engines above 600 kW on commercial vessels beginning in 2014. For remanufactured engines, standards apply only to commercial marine diesel engines above 600kW when the engines are remanufactured and as soon as certified systems are available.

5.3.1.5 Environmental Protection Agency Diesel Fuel Rule

This EPA rule limited the sulfur content in on-road diesel fuel to 15 ppm starting June 1, 2006 (EPA 2006a).

5.3.1.6 Conformity Rule

Section 176(c) of the CAA states that a federal agency cannot issue a permit for or support an activity unless the agency determines it would conform to the most recent EPA-approved State Implementation Plan. This means that projects using federal funds or requiring federal approval must not (1) cause or contribute to any new violation of a NAAQS, (2) increase the frequency or severity of any existing violation, or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone (EPA 2010b).

Based on the present NAAQS attainment status of the SCAB, a federal action would conform to the State Implementation Plan if its annual emissions remain below 100 tons of CO and $PM_{2.5}$, 70 tons of PM_{10}, and 10 tons of NO_X or VOCs (EPA 2010c). These de minimis thresholds apply to the proposed construction and operation activities pertaining to the federal action. If the proposed action exceeds one or more of the de minimis thresholds, a more rigorous conformity determination is the next step in the

conformity evaluation process. SCAQMD Rule 1901 adopts the guidelines of the General Conformity Rule. A comparison of the federal action to the de minimis thresholds is presented in Appendix 5-A.

5.3.2 State

5.3.2.1 California Clean Air Act

The California Clean Air Act of 1988, as amended in 1992, outlines a program to attain the CAAQS by the earliest practical date. Because the CAAQS are more stringent than the NAAQS, attainment of the CAAQS will require more emissions reductions than what would be required to show attainment of the NAAQS. Consequently, the main focus of attainment planning in California has shifted from the federal to state requirements. Similar to the federal system, the state requirements and compliance dates are based on the severity of the ambient air quality standard violation within a region.

5.3.2.2 Heavy-Duty Diesel Truck Idling Regulation

This CARB rule affected heavy-duty diesel trucks in California beginning in 2008. The rule requires that heavy-duty trucks be equipped with a non-programmable engine system that shuts down the engine after 5 minutes to prevent long idling times or, as an alternative, meet a stringent NO_X idling emission standard.

5.3.2.3 California Diesel Fuel Regulations

With this rule, CARB set sulfur limits of 15 ppm for diesel fuel sold in California for use in on-road and off-road motor vehicles. Harbor craft were originally excluded from the rule but were later included by a 2004 rule amendment.

5.3.2.4 Statewide Portable Equipment Registration Program

The Statewide Portable Equipment Registration Program (PERP) establishes a uniform program to regulate portable engines and portable engine-driven equipment units (CARB 2010b). Once registered in this program, engines and equipment units may operate throughout California without the need to obtain individual permits from local air districts. The portable equipment, however, cannot reside at the same location for more than 12 months. Some construction-related equipment may be registered under PERP. Equipment would not reside at the same location for more than 12 months.

5.3.2.5 On-Road Heavy-Duty Diesel Vehicles (In Use) Regulation

On December 12, 2008, CARB approved the on-road heavy-duty diesel vehicle (in use) regulation to significantly reduce PM and NO_X emissions from existing diesel vehicles operating in California. The regulation applies to nearly all diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds that are privately or federally owned and for privately and publicly owned school buses.

Starting January 1, 2012, the regulation would phase-in requirements for heavier trucks to reduce PM emissions with exhaust retrofit filters that capture pollutants before they are emitted to the air or by replacing vehicles with newer vehicles that are originally equipped with PM filters. Starting on January 1, 2015, lighter trucks with a GVWR of 14,001 to 26,000 pounds with engines that are 20 years or older would need to be replaced with newer trucks. Starting January 1, 2020, all remaining trucks and buses would need to be replaced so that they would all have 2010 model year engines or equivalent

emissions by 2023. The CARB compliance timeline for vehicles with a GVWR of 14,001 to 26,000 pounds is shown in Table 5-10.

Table 5-10. CARB Compliance Schedule for Light-Duty Diesel Trucks and Buses with a GVWR of 14,001 to 26,000 Pounds

Engine Year Requiring Replacement	Compliance Date As of January 1	Replacement Engine Year
1995 and older	2015	2010 or newer
1996	2016	2010 or newer
1997	2017	2010 or newer
1998	2018	2010 or newer
1999	2019	2010 or newer
2000–2003	2020	2010 or newer
2004–2006	2021	2010 or newer
2007–2009	2023	2010 or newer

Source: CARB 2011a

Heavier trucks and buses with a GVWR greater than 26,000 pounds would have two ways to comply. Fleets could comply with a compliance schedule by engine model year or use a phase-in option where engine replacement could be delayed by installing a PM filter on the existing engine. The CARB compliance schedule for heavier trucks with a GVWR greater than 26,000 pounds is shown in Table 5-11. The compliance schedule overlaps with the construction timeline for program and project elements.

Table 5-11. CARB Compliance Schedule for Heavy-Duty Diesel Trucks and Buses with a GVWR greater than 26,000 Pounds

Engine Year Requiring Replacement	Compliance Date As of January 1	Replacement Engine Year
Pre-1994	2015	2010 or newer
1994–1995	2016	2010 or newer
1996–1999	2012 (2020)[a]	2010 or newer
2000–2004	2013 (2021)[a]	2010 or newer
2005–2006	2014 (2022)[a]	2010 or newer
2007–2009	2023	2010 or newer

[a] Installing a PM filter on 1996 model year and newer engines delays replacement by 8 years.
Source: CARB 2011a

5.3.2.6 Off-Road Diesel Fleet Regulation

On July 26, 2007, CARB adopted a regulation to reduce diesel PM and NO_X emissions from existing off-road heavy-duty vehicles in California. This regulation applies to off-road vehicles with a 25 horsepower engine or greater, such as loaders, crawler tractors, skid steers, backhoes, forklifts, and two-engine cranes. The regulation does not apply to stationary equipment or portable equipment, such as generators. The off-road performance requirements are applied to a fleet as a whole and not to individual vehicles, and are based on a fleet's average NO_X emissions. The goal of the regulation is to encourage fleet owners to replace a certain percentage of their diesel fleet over time with cleaner emitting vehicles in order to meet the lower annual NO_X limits. This CARB rule is applicable to the off-road diesel vehicles that would be used during the construction of the program and project elements.

The regulation was amended in December 2010 to provide a 4-year delay from the original compliance timeline for all fleets. By January of each year, starting in 2014, each fleet must meet the fleet average NO_X requirements or, as an alternative, a specified percentage of the fleet must be replaced with newer

engines. The percent turnover is referred to by CARB as best available control technology (BACT). The CARB compliance schedule for off-road diesel fleets is shown in Table 5-12.

Table 5-12. CARB Compliance Schedule for Off-Road Diesel Fleets

	Compliance Target for Each Fleet Size					
	Large Fleet (over 5,000 hp)		Medium Fleet (2,501–5,000 hp)		Small Fleet (2,500 hp or less)	
Compliance Date (January 1 of Year)[a]	NO_X Target (g/bhp-hr)	Alternative Compliance Through Fleet Turnover (% turnover required)[b]	NO_X Target (g/bhp-hr)	Alternative Compliance Through Fleet Turnover (% turnover required)[b]	NO_X Target (g/bhp-hr)	Alternative Compliance Through Fleet Turnover (% turnover required)[b]
2014	7.2	4.8	No target	No target	No target	No target
2015	6.8	8	No target	No target	No target	No target
2016	6.5	8	No target	No target	No target	No target
2017	6.0	8[c]	6.0	8	No target	No target
2018	5.5	10	5.5	10	No target	No target
2019	5.0	10	5.0	10	7.2	10
2020	4.5	10	4.5	10	6.8	10
2021	4.0	10	4.0	10	6.5	10
2022	3.5	10	3.5	10	6.0	10
2023	3.4	10	3.4	10	5.5	10

[a] Based on December 2010 amendments.
[b] Referred to by CARB as BACT.
[c] Must meet certain requirements for 8 percent turnover; otherwise, turnover percentage can be higher.
Source: CARB 2010c

5.3.2.7 Airborne Toxic Control Measure for Commercial Harbor Craft

In 2007, the CARB approved a regulation to reduce emissions from diesel engines on commercial harbor craft vessels. The regulation was intended to reduce DPM and NO_X emissions from harbor craft engines. The rule became effective in 2009 and was amended in 2010. The rule includes new engine and in-use engine requirements for many diesel engines on commercial harbor craft. The compliance schedule is phased in such that it brings the oldest and highest use engines into compliance first. This CARB rule is applicable to marine engines on tugboats that would be used during the construction of the project elements.

The rule requires that tugboats comply with in-use engine requirements per the compliance schedule as presented in Table 8 of the regulation, which is provided as Table 5-13.

Table 5-13. Compliance Dates for Engines on Ferries, Excursion Vessels, Tugboats, Towboats, and Push Boats Vessels With Homeports in SCAQMD

Engine Model Year	Total Annual Hours of Operation	Compliance Date
1979 and earlier	≥300	12/31/2009
1980–1985	≥300	12/31/2010
1986–1990	≥300	12/31/2011
1991–1995	≥300	12/31/2012
1996–2000	≥300	12/31/2013
2001	≥300	12/31/2014
2002	≥300	12/31/2015
2003	≥300	12/31/2016
2004	≥300	12/31/2017
2005	≥300	12/31/2018
2006	≥300	12/31/2019
2007	≥300	12/31/2020

For example, if a 1982-model year diesel engine on a tugboat operating in regulated California waters is used for 300 or more hours in 2009, the owner or operator must bring the engine into compliance with the requirements of subsection (e)(6)(C) by December 31, 2010.

Source: CARB 2011c

5.3.2.8 Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines

Effective February 19, 2011, diesel-fueled portable engines with a rated brake horsepower of 50 or greater are subject to the CARB's Airborne Toxic Control Measure (ATCM). The ATCM imposes fuel and DPM emission requirements for in-use and new portable diesel engines. Diesel fleets are required to meet certain DPM standards by set compliance dates. By January 1, 2020, new emergency standby diesel engines will need to be certified to Tier 4 emission standards.

5.3.3 Regional

5.3.3.1 South Coast Air Quality Management District Rule and Regulations

Through the attainment planning process, SCAQMD has developed and adopted rules and regulations to address stationary sources of air pollution in the SCAB. The SCAQMD rules that are most pertinent to the program and project elements are shown in Table 5-14.

Table 5-14. SCAQMD Rules Applicable to Stationary Source Program and Project Elements

SCAQMD Rule	Purpose of Rule	Emission Sources
Program Elements		
402	Nuisance rule that prohibits the discharge of air contaminants that causes injury and annoyance, endangers public health and safety, or damages property	Potential odors during construction of 33 miles of sewers within the JOS
403	Fugitive dust rule that prohibits dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the emission source property line. Requires best available control measures to be applied to earth moving and grading activities	Construction of 33 miles of sewers within the JOS Construction associated with 25 MGD expansion of the SJCWRP Construction of flow equalization tanks for process optimization at various water reclamation plants: SJCWRP, POWRP, LCWRP, and LBWRP Construction of 6 new digesters at the JWPCP
1113	Sets a limit on the VOC content in architectural paint	Painting of flow equalization tanks for process optimization at various water reclamation plants: SJCWRP, POWRP, LCWRP, and LBWRP Painting of 6 new digesters at the JWPCP
1146	Sets NO_X limits for exhaust from large external combustion equipment, such as commercial boilers, steam generators, and process heaters	A new combustion device (e.g., boiler for producing steam) at the JWPCP should the existing flares not be used to manage the additional digester gas
1166	Requires a mitigation plan for soil contaminated with VOCs	Any contaminated soil encountered during construction
1402	Sets action triggers based on facility-wide risks for public notification and mandatory risk reduction	Total of all sources within each facility
1470	Sets fuel requirements and limits operating hours on diesel engines	Emergency stand-by diesel generator at the SJCWRP, which would be the fourth generator at the facility
1472	Reduces diesel particulate emissions from facilities with three or more stationary emergency stand-by diesel engines/generator	Emergency stand-by diesel generator at the SJCWRP, which would be the fourth generator at the facility
Project Elements		
403	Fugitive dust rule that prohibits dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the emission source property line. Requires best available control measures to be applied to earth moving and grading activities	Construction at shaft sites
1166	Requires a mitigation plan for soil contaminated with VOCs	Any contaminated soil encountered during construction

MGD = million gallons per day
Source: SCAQMD 2011b

The proposed emergency standby diesel engine for the SJCWRP under the program would be exempt from SCAQMD Rule 1110.2, but SCAQMD Rules 1470 and 1472 would apply. Any architectural paints used for the program or project elements would meet SCAQMD Rule 1113 requirements. The Sanitation Districts would follow SCAQMD Rule 1166 requirements should any contaminated soil be encountered during construction.

5.3.4 Local

5.3.4.1 Los Angeles Harbor Department Sustainable Construction Guidelines

For project elements that are constructed within the Port of Los Angeles, construction guidelines developed by the LAHD would apply. In February 2008, the LAHD Board of Harbor Commissioners

adopted the LAHD Sustainable Construction Guidelines for Reducing Air Emissions (LAHD Construction Guidelines) (LAHD 2008). These guidelines are used to establish air emission criteria for inclusion in construction bid specifications. The LAHD Construction Guidelines reinforce and require sustainability measures during performance of the contracts, balancing the need to protect the environment while providing for the economic development of the Port of Los Angeles. Future Board of Harbor Commissioners resolutions could expand the guidelines to cover other aspects of construction, including planning and design. These construction guidelines were incorporated into the Port of Los Angeles' Clean Air Action Plan. Therefore, following these construction guidelines would be consistent with the Port of Los Angeles' Clean Air Action Plan (San Pedro Bay Ports 2010).

The intent of the LAHD Construction Guidelines is to facilitate the integration of sustainable concepts and practices into all capital projects at the port and to phase in the implementation of these procedures in a practical, yet expedited, manner. The measures contained in the LAHD Construction Guidelines that are above and beyond those required by the EPA, SCAQMD, or CARB are shown in Table 5-15.

Table 5-15. SCAQMD Rules Applicable to Stationary Source Project Elements

LADH Measure	Regulatory Requirement
Harbor craft will meet the EPA Tier 3 engine emission standards by January 1, 2011.	EPA requires that Tier 3 standards be applied to new and repowered Category 1 and Category 2 marine diesel engines; phasing in over 2009–2014 depending on engine size.
All dredging equipment will be electric, if feasible.	No comparable regulatory requirement.
On-road heavy-duty trucks will comply with the EPA 2004 on-road emission standards for PM_{10} and NO_X and will be equipped with a CARB-verified Level 3 device. Emission standards will increase to the EPA 2007 on-road emission standards for PM_{10} and NO_X by January 1, 2012.	CARB requires installing PM filter or replacing certain older diesel trucks starting in 2012.
Source: LAHD 2008	

The LADH measures described in the table are incorporated into the project, where feasible, as mitigation for project elements within the Port of Los Angeles.

5.4 Environmental Impacts and Mitigation Measures

Program and project elements are summarized in Table 5-6 and Table 5-7 as they pertain to air quality considerations. The methodologies used to estimate emissions from the program and project elements are described in this section.

5.4.1 Methodology and Assumptions

The emission estimates presented in this document were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available for this study. The estimates were compared to the thresholds of significance described in detail in Section 5.4.2.

Mitigation measures were applied to those proposed activities that would exceed a significance criterion, and then evaluated as to their effectiveness in reducing impacts of the program and project elements. The numerical results presented in the tables of this chapter were rounded, often to the nearest whole number, for presentation purposes. As a result, the sum of tabular data in the tables could differ slightly from the reported totals. Although the rounded numbers create an apparent discrepancy in the table, the underlying addition is accurate.

5.4.1.1 Summary of Methodologies for Determining Unmitigated Emissions

The methodologies used to estimate emissions from the program and project elements are summarized in Table 5-16.

Table 5-16. Summary of Methodologies Used to Estimate Unmitigated Emissions

Program Element/Functional Category	Emission Sources	Method for Estimating Emissions[a]
Program[b]		
SJCWRP Plant Expansion (Construction)	Site preparation and construction, on-road worker vehicles, construction equipment, heavy-duty haul trucks, and fugitive dust	Emissions model URBEMIS2007[c] Assumes a statewide average off-road diesel fleet mix and then uses the emission factor for each model year SCAQMD Rule 403 used for minimum requirement for fugitive dust control[c]
SJCWRP Plant Expansion (Operation)	Diesel stationary engine exhaust for permitted emergency generator. Handling of increased wastewater due to increased plant capacity at the west plant	EPA Tier 4 standards SCAQMD Rule 1179 Joint Emissions Inventory Program (JEIP) for VOC emissions, 1993. SCAQMD Pooled Emission Estimating Program (PEEP) for toxic emissions, 1989
SJCWRP, POWRP, LCWRP, and LBWRP Process Optimization (Construction)	Site preparation and construction for installing flow equalization tanks, on-road worker vehicles, construction equipment, heavy-duty haul trucks, and fugitive dust	Emissions model URBEMIS2007 Assumes a statewide average off-road diesel fleet mix and then uses the emission factor for each model year SCAQMD Rule 403 used for minimum requirement for fugitive dust control[d]
JWPCP Solids Processing (Construction)	Site preparation and construction, on-road worker vehicles, construction equipment, heavy-duty haul trucks, and fugitive dust	Emissions model URBEMIS2007 Assumes a statewide average off-road diesel fleet mix and then uses the emission factor for each model year SCAQMD Rule 403 used for minimum requirement for fugitive dust control[d]
JWPCP Solids Processing (Operation)	Handling of incremental solids due to increased solids processing Combustion of incremental digester gas due to increase in solids handling, either with existing flares or a new boiler for steam production	Source testing data for existing VOC emissions Source testing data for existing boilers and flares SCAQMD Rule 1146 NO_X limit used for new boiler
JWPCP Biosolids Management (Operation)	On-road diesel truck emissions for biosolids hauling. Paved road dust	Emissions model EMFAC2007 for criteria pollutants EPA AP-42 emission factors used for paved road dust
Project		
Shaft Site (Construction)	Site preparation and construction equipment, on-road worker vehicles, heavy duty haul trucks, and fugitive dust	Emissions model OFFROAD2007 Assumes a statewide average off-road diesel fleet mix and then uses the emission factor for each model year SCAQMD Rule 403 used for minimum requirement for fugitive dust control[d] EPA AP-42 emission factors used for dust generated over unpaved surfaces

Table 5-16 (Continued)

Program Element/Functional Category	Emission Sources	Method for Estimating Emissions[a]
Tunnel Alignment (Construction)	Construction equipment, on-road worker vehicles, heavy duty haul trucks, and fugitive dust	Emissions model OFFROAD2007 Assumes a statewide average off-road diesel fleet mix and then uses the emission factor for each model year
	Locomotive emissions during tunneling	EPA Tier 2 diesel engine is assumed
Riser/Diffuser Area (Construction)	Harbor craft, on-barge equipment, on-road diesel trucks, and worker vehicles	Emissions model OFFROAD2007 Uses the Port of Los Angeles' inventory of vessels to get the model years for each vessel type and the emission factor for each model year is used. The fleet mix is kept static throughout the construction

[a] Specific data and assumptions used are found in Appendix 5-B.

[b] Emissions model CalEEMod was not available in time for the EIR/EIS, but URBEMIS2007 is still appropriate for estimating emissions.

[c] Analysis years 2020, 2030, 2040, and 2050 were considered for program operations. These years were chosen based on the start dates of anticipated new operational activities. It is anticipated that WRP process optimization would be completed as early as 2020. The SJCWRP expansion is expected to start in 2030; as a result, 2030 would be the earliest year during which an increase in emissions could result from the new generator. The year 2040 was included in the analysis because that is the last year for which emission factors are available for on-road vehicles through CARB. The year 2050 is the planning horizon for the Clearwater Program.

[d] Compliance with SCAQMD Rule 403 would result in a 68 percent reduction in fugitive dust emissions (see CEQA Handbook Table A11-9-A:A11-77).

5.4.1.2 Methodology for Determining Program-Related Construction and Operational Emissions

The air quality impact analysis considers construction and operational impacts associated with the program. Construction impacts include emissions generated as a result of construction activities for the program elements. Construction of each program element would involve, but would not be limited to, the use of off-road construction equipment, on-road employee vehicles, and heavy-duty haul trucks. Because these sources would primarily use diesel fuel, they would generate emissions of diesel exhaust in the form of VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. In addition, off-road construction equipment traveling over unpaved surfaces and performing earthmoving activities such as site clearing or grading would generate fugitive dust emissions in the form of PM_{10} and $PM_{2.5}$. Worker commute vehicles and haul trucks would also generate vehicle exhaust and road dust emissions. Construction emissions for the program elements were estimated based on information and data provided by the Sanitation Districts, EPA and CARB emission factors, and information from similar Sanitation Districts' projects.

Operation of the program elements has the potential to create air quality impacts through emissions generated from fuel combustion and wastewater processing from stationary sources, biosolids hauling trucks from the JWPCP, and from an emergency generator at the SJCWRP. Emissions from program operation were estimated based on information and operational data provided by the Sanitation Districts and the EPA, and CARB emission factors.

Analysis years 2020, 2030, 2040, and 2050 were considered for program operations. These years were chosen based on the estimated start dates of the anticipated new operational activities. It is anticipated that WRP process optimization would be completed as early as 2020. The SJCWRP expansion is expected to start in 2035; as a result, 2035 would be the earliest year during which an increase in emissions could result from the new generator. The year 2040 was included in the analysis because that is the last year for which emission factors are available for on-road vehicles through CARB. The year 2050 is the planning horizon for the Clearwater Program.

The construction and operation emission calculation tables are presented in Appendix 5-B.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Construction associated with expansion of the SJCWRP would include site preparation and treatment module installation. The SJCWRP consists of two plants: the SJCWRP East and the SJCWRP West. Construction activities associated with SJCWRP expansion would only occur at the SJCWRP West. For this analysis, it was assumed that SJCWRP expansion would occur after 2035 but before 2040. Although it is expected that construction would take between 2 and 3 years to complete, it was conservatively assumed that all construction would occur during a fast-paced 24-month period. Emissions associated with site preparation and treatment module installation were calculated using the URBEMIS2007 emissions model (URBEMIS 2007). It was assumed that site preparation would take 3 months to complete, and treatment module installation would take 21 months to complete. The assumed construction activity was based on similar Sanitation Districts' projects (Sanitation Districts 2005).

Fugitive dust and exhaust emissions would result from off-road construction equipment and from on-road travel associated with construction workers, material deliveries, and hauling trucks. Fugitive dust emissions from earth-moving activities are proportional to the amount of material handled or surface area disturbed. Within URBEMIS, the worst-case fugitive dust emission rate is 38.2 pounds per acre disturbed per day. For purposes of analysis, fugitive dust emissions were reduced by 68 percent from uncontrolled (worst-case) levels to reflect required compliance with SCAQMD Rule 403 (SCAQMD CEQA Handbook Table A11-9-A: A11-77). According to SCAQMD guidance, Rule 403 would reduce fugitive dust emissions by 68 percent (SCAQMD 2005) by watering three times per day. The dust-control methods would be specified in a dust-control plan that would be submitted to the SCAQMD per Rule 403. Fugitive dust emissions were evaluated in the same way for all program construction elements.

The types and number of construction equipment were estimated based on engineering consultant specifications (Utsumi pers. comm. 2010) and construction data from a similar Sanitation Districts' project (Sanitation Districts 2005). For this analysis, it was assumed that construction phases would not overlap because installation could only occur after site preparation is complete. The phase producing the highest daily emissions was selected as representative of peak day emissions. These emission estimates are conservative in nature and may not be representative of actual daily emissions because they are meant to convey a worst-case scenario.

Operations

Wastewater Treatment

SJCWRP expansion would increase the facility's treatment capacity at the SJCWRP West and would thereby result in increased wastewater treatment and nutrient removal activities. The new wastewater treatment module would have odor control systems to appropriately manage any odors that would be generated. Existing stationary sources would not be affected or changed by the plant expansion.

Generator

An additional stationary emergency diesel generator would be installed on site as part of the SJCWRP expansion. Emissions from generator exhaust were calculated using EPA final Tier 4 standards for generator sets. The emergency generator would not be required at the SJCWRP until after the plant is expanded, which is not likely until after 2035. It was assumed that the generator would be tested for approximately 50 hours per year based on the maximum activity permitted by the SCAQMD for maintenance and testing (the existing generators have typically been tested for an average of

approximately 15 to 20 hours per year [Sanitation Districts 2011]). Emissions from 1 hour of testing per day were assumed. These emission estimates are conservative in nature, meant to convey a worst-case scenario, and are, therefore, not necessarily representative of actual daily emissions.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

Construction of process optimization facilities would occur at four separate WRPs: the SJCWRP, the POWRP, the LCWRP, and the LBWRP. Construction activities associated with process optimization would begin in 2018 and take 2 to 3 years at the SJCWRP and 1 to 2 years at the POWRP, LCWRP, and LBWRP sites. For this analysis, it is assumed that all construction activities related to process optimization would occur simultaneously during the years 2018 and 2019, while construction at the SJCWRP would continue until 2020.

Construction emissions associated with process optimization facilities were estimated using the URBEMIS 2007 model. Construction activities would likely include site preparation and installation of a below-grade flow equalization tank. For this analysis, it was assumed that construction phases would not overlap at any given location because tank installation cannot occur until site preparation is complete. However, because construction of process optimization facilities would potentially occur at several WRPs simultaneously, peak daily emissions from each project site were combined for the overlapping construction years of 2018 and 2019. The combination of construction activities producing the highest daily emissions was selected as the peak day for regional emissions. These emission estimates are conservative in nature, meant to convey a worst-case scenario, and are, therefore, not necessarily representative of actual daily emissions.

Fugitive dust emissions were evaluated in the same way for all program construction elements, as described in the SJCWRP expansion construction methodology.

Operations

There would be no operational emissions associated with process optimization.

Joint Water Pollution Control Plant – Solids Processing

Construction

Construction associated with solids processing at the JWPCP would consist of the installation of six digesters. The capacity of the existing sludge dewatering system is anticipated to be sufficient to meet the projected future digested biosolids flow for 2050. Existing dewatering equipment may be replaced within the 2050 planning horizon. However, equipment replacement is not part of this analysis and would be analyzed as part of future permitting efforts.

Construction of the new digesters could occur at any time between 2018 and 2050. Construction emissions associated with JWPCP solids processing were estimated using the URBEMIS2007 model. Construction activities would likely include site excavation and digester installation. The types and number of construction equipment were estimated based on program specifics and information from SCAQMD's construction scenarios (SCAQMD 2008b). For this analysis, it was assumed that construction phases would not overlap because installation of digesters cannot occur until site excavation is complete. Each phase was modeled in URBEMIS on a daily basis, and the construction phase producing the highest daily emissions was selected as the peak day. These emission estimates are

conservative in nature, meant to convey a worst-case scenario, and are, therefore, not necessarily representative of actual daily emissions.

Fugitive dust emissions were evaluated in the same way for all program construction elements, as described in the SJCWRP expansion construction methodology.

Operations

Combustion of Digester Gas

Increased solids processing at the JWPCP would result in increased production of digester gas, which would be combusted in the existing flares or beneficially used to produce steam to heat digesters, using a new boiler. The increase in digester gas was projected linearly in relation to the expected 23 percent increase in solids handling at the JWPCP by 2050. This would result in an annual increase of approximately 730 million standard cubic feet of digester gas. Because of the uncertainty of whether the existing flares or a new boiler would be used to combust the additional digester gas, the analysis assumed the worst-case emission factors between the existing flares and a new boiler. The NO_X limits in SCAQMD Rule 1146 were used for the boiler emissions.

Wastewater Processes

The increase in solids processing at the JWPCP could result in an increase in odor generating potential from the wastewater treatment processes at the JWPCP. However, the odor control systems at the JWPCP have sufficient capacity to capture and treat these odors.

Joint Water Pollution Control Plant – Biosolids Management

Construction

No construction is associated with biosolids management because it entails only truck hauling of treated and dewatered biosolids to remote locations for beneficial use or landfill disposal.

Operations

With the expansion of the JOS and the increased biosolids processing at the JWPCP, it is anticipated that there would be an additional 20 truckloads per day above the 2008 levels to haul biosolids to various locations for beneficial use or disposal. The year 2008 is used to define baseline conditions. In 2008, biosolids were hauled to various locations within the SCAB and nearby air basins for disposal or beneficial use, as shown in Table 2-6. In future years, biosolids will be hauled to similar locations, with the exception that one location will be closed in 2013 (Puente Hills Landfill, located approximately 30 miles from the JWPCP) and another location will be added (Westlake Farms, located approximately 200 miles from the JWPCP) (see Figure 3-10).

For analysis years 2020, 2030, and 2040, daily emissions from biosolids hauling were calculated by multiplying haul truck vehicle miles traveled (VMT) by emission factors. VMT was calculated as the product of the average distance to a biosolids management location and the number of truck trips per year (based on 55 truck loads per day at baseline and 75 truck loads per day by 2050). The average distance was determined by weighting the distance to each location by the amount of biosolids transported to that location. The gradual increase of biosolids generated at the facility would result in a corresponding gradual increase of haul truck trips. Emission factors were generated by EMFAC2007 for a truck fleet representative of the county of Los Angeles (CARB 2006b).

Emissions were quantified for onsite travel at the JWPCP as well as for truck travel on public roadways to various disposal locations. Emissions would include exhaust from truck idling as well as exhaust and

road dust from truck travel. It was assumed that trucks would travel at 5 miles per hour (mph) for an approximate distance of 0.6 mile on site.

5.4.1.3 Methodology for Determining Project-Related Construction Emissions

Once constructed, the project-specific elements would not result in operational emissions. Therefore, only construction emissions are calculated in this assessment. Construction activities for the project-specific elements would include, but not be limited to, the use of off-road construction equipment, tugboats, and on-road heavy-duty haul trucks. Because these sources would primarily use diesel fuel, they would generate emissions of diesel exhaust in the form of VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. In addition, off-road construction equipment traveling over unpaved surfaces and performing earthmoving activities, such as site clearing or grading, would generate fugitive dust emissions in the form of PM_{10} and $PM_{2.5}$. Worker commute vehicles and haul trucks would also generate vehicle exhaust and paved road dust emissions.

Construction emissions were estimated using the following methodology. The Sanitation Districts supplied the equipment usage and scheduling data needed to calculate emissions for the proposed construction activities. Emission factors from CARB's OFFROAD2007 and EMFAC2007, and the 2008 Port of Los Angeles Inventory of Air Emissions (Starcrest 2009) were identified for each type of equipment, heavy-duty trucks, and marine vessels, respectively. In some cases, the horsepower rating of the equipment was required in order to estimate emissions. Assumptions regarding emission control measures assumed in the unmitigated construction emission calculations are presented in Table 5-16.

To estimate peak daily construction emissions, emissions were first calculated for the individual construction activities (e.g., shaft construction, offshore and onshore tunneling, riser and diffuser area construction, etc.). Peak daily emissions then were determined by summing emissions from overlapping construction activities as indicated in the proposed construction schedule (Appendix 5-B). The combination of construction phases across all locations producing the highest daily emissions was selected as the peak day. These emission estimates are conservative in nature, meant to convey a worst-case scenario, and are, therefore, not necessarily representative of actual daily emissions.

The specific approaches to calculating emissions for the various emission sources during construction of the project are discussed in the following sections. The construction emission activity, emission factors, and calculation tables are presented in Appendix 5-B.

Off-Road Construction Equipment

Emissions of VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ from diesel-powered construction equipment for both land-based equipment (e.g., cranes, loaders, etc.) and marine equipment (e.g., barge-mounted equipment) were calculated using emission factors derived from the CARB OFFROAD2007 Emissions Model (CARB 2006a). Using the county of Los Angeles fleet information, the OFFROAD2007 model was run for each of the construction years of 2014 through 2021. For purposes of estimating unmitigated emissions, the fleet mix was assumed to have some degree of turnover as older equipment is replaced with newer equipment. The fleet mix was assumed to change at the start of each new phase, but then assumed to remain constant during the course of that phase. Emission factors were calculated based on each type of equipment, the horsepower rating of the equipment, and the corresponding equipment activity levels.

Locomotives Used During Tunneling Activities

Small, mining-type locomotives would be used to convey excavated material and personnel in rail cars through the tunnel alignments. Emissions from these diesel-powered locomotives were quantified using

EPA Tier 2 off-road diesel emission standards for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$. SO_X emissions were calculated based on the sulfur content of California diesel fuel of 15 ppm. Locomotive engine rating and activity, based on engineering specifications, were assumed to be 185 horsepower and 12 hours per day. It was assumed that up to 5 locomotives could operate simultaneously.

On-Road Trucks Used During Construction

Emissions from on-road, heavy-duty diesel trucks during construction were calculated using emission factors generated by the EMFAC2007 on-road mobile source emission factor model for a truck fleet representative of the county of Los Angeles (CARB 2006b). For purposes of estimating unmitigated emissions, the truck fleet mix was assumed to have some degree of turnover as older trucks are replaced with newer equipment. The truck fleet mix was assumed to change at the start of each new phase, but then assumed to remain constant during the course of that phase. The EMFAC2007 model output shows that, on a per-mile basis, emission factors will steadily decline in future years as older trucks are replaced with newer, cleaner trucks that meet the required state and federal on-road engine emission standards.

Other assumptions regarding on-road trucks during construction are as follows:

- Trucks hauling debris or fill materials would travel a distance of approximately 60 miles per trip (Sanitation Districts 2011).
- Non-incidental onsite truck idling time[1] would be limited to 5 minutes for all truck trips per CARBs Heavy-Duty Vehicle Idling Emissions Reduction Program (CARB 2009).

Tugboats Used During Construction

During construction, tugboats would be used to guide barges. Emissions from tugboat main and auxiliary engines were calculated using the methodology found in the Port of Los Angeles 2008 Air Emissions Inventory (Starcrest 2009) and the CARB methodology (CARB 2007). The methodology is based on a zero hour emission rate for the engine model year in the absence of any malfunction or tampering of engine components that can change emissions, plus a deterioration rate. The deterioration rate reflects the fact that base emissions of engines change as the equipment is used due to wear of various engine parts or reduced efficiency of emission control devices.

CARB's deterioration factors, useful life, and zero-hour emission factors for commercial harbor craft were used for all pollutants except SO_X. SO_X emissions were quantified based on brake-specific fuel consumption and a sulfur fuel content of 15 ppm, which is the sulfur content limit for California harbor craft, in accordance with California Diesel Fuel Regulations (CARB 2004).

Fugitive Dust During Construction

CARB's EMFAC2007 factors were used to determine the fugitive dust generated by heavy-duty trucks and automobiles traveling both on site and off site. Fugitive dust emissions from earth-moving activities are proportional to the amount of material handled. Emissions from loading, dumping, and construction equipment traveling over unpaved surfaces were estimated using the emissions factors in the EPA's Emission Factors and AP-42 (EPA 2006b). Unmitigated emissions were reduced by 68 percent from uncontrolled levels to reflect required compliance with SCAQMD Rule 403 (SCAQMD CEQA Handbook Table A11-9-A: A11-77). According to SCAQMD guidance, Rule 403 would reduce fugitive dust emissions by 68 percent (SCAQMD 2005) by watering three times per day. The dust-control

[1] Non-incidental idling time refers to idling time not directly associated with truck loading. For example, idling while in queue would be considered non-incidental idling, whereas idling while under the loader would not.

methods for the project would be specified in the dust-control plan that would be submitted to the SCAQMD per Rule 403.

Worker Commute Trips During Construction Activities

Emissions from worker trips during construction were calculated using the EMFAC2007 emission factors in conjunction with crew information supplied by the Sanitation Districts. The Sanitation Districts' construction estimates provided detailed information about the number of crew and man-hours required for each project element. A standard trip distance of 20 miles was used to calculate total VMT (URBEMIS 2007).

5.4.1.4 Baseline

CEQA Baseline

The California Environmental Quality Act (CEQA) baseline for the Clearwater Program is described in Section 1.7.4.1. CEQA Guidelines require that an environmental impact report (EIR) include a description of the physical environmental conditions in the project vicinity that exist at the time of the notice of preparation. These environmental conditions would normally constitute the baseline physical conditions by which the CEQA lead agency determines whether an impact is significant. For purposes of this EIR/EIS, the CEQA baseline for determining the significance of potential impacts of the program and project is the existing conditions in 2008. The CEQA baseline represents the setting at a fixed point in time (2008) and differs from the No-Project Alternative (Alternative 5) in that the No-Project Alternative addresses what is likely to happen at the site over time, starting from the existing conditions. The No-Project Alternative allows for growth at the project site that would occur without additional approvals.

The CEQA baseline for construction activities is zero because construction activities would result in new emissions. The CEQA baseline for the operational activities and alternatives includes emissions generated at the SJCWRP and the JWPCP, as well as emissions currently generated as a result of hauling biosolids from the JWPCP site to various disposal and beneficial use facilities (see Figure 2-10). Emissions identified in the CEQA baseline reflect all JWPCP and SJCWRP sources. The program elements do not propose new stationary sources for the other WRPs so they are not included in the baseline.

The average daily operational emissions associated with the CEQA baseline are presented in Table 5-17. Emissions result primarily from stationary sources in support of wastewater treatment processes (such as turbines, hot water heaters, generators, boilers, flares, and other fuel-burning equipment) and from biosolids hauling from the JWPCP to the facilities shown on Figure 2-10. The single largest source of baseline CO, NO_X, and PM emissions is the digester gas-fired stationary turbines. The single largest source of baseline VOC and SO_X emissions is from processes used to thicken, stabilize, dewater, and store biosolids. Each of these biosolids processing facilities has an odor control system to control the trace VOC and SO_X constituents in the ambient air and, therefore, minimizes any odor impacts.

The 2008 emissions for SJCWRP and JWPCP were based on the Annual Emissions Report (AER) by the SCAQMD, reported in tons per year. To maintain consistency with this analysis, AER emissions were converted into pounds per day. Particulate emissions, reported as total PM in the AER, were converted to PM_{10} and $PM_{2.5}$ based on the fraction of PM_{10} and $PM_{2.5}$ to total PM in fuel combustion, per SCAQMD protocols (SCAQMD 2006).

Because baseline emissions were obtained from annual emissions presented in the AER and converted to daily emissions, they represent average daily emissions. The CEQA baseline emissions from biosolids hauling were calculated using the methodology presented in Section 5.4.1.1 and also represent average daily emissions. Operations at the JWPCP and WRPs vary throughout the day but are fairly consistent

throughout the year. Average daily emissions are always lower than peak daily emissions. Therefore, the use of average emissions in the CEQA baseline results in a lower baseline and, therefore, a conservative estimate of CEQA impacts when compared to peak daily program emissions.

Table 5-17. Operational Emissions – CEQA Baseline 2008

	Emissions (pounds per day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
SCAB						
JWPCP[a]	136	349	435	90	123	122
SJCWRP[a]	26	12	7	<1	1	1
Biosolids Hauling[b]	25	93	309	<1	183	39
Total	187	453	751	90	306	161
SDAB						
Biosolids Hauling[c]	5	19	63	<1	37	8
SSAB						
Biosolids Hauling[c]	4	14	48	<1	29	6
SJVAB						
Biosolids Hauling[b]	8	31	103	0	61	13

[a] Emissions from the WRPs and the JWPCP are emissions from SCAQMD permitted and nonpermitted equipment as reported in the 2008 Annual Emissions Reporting for each facility.

[b] Emissions from biosolids hauling were quantified using the methodology in Section 5.4.1.1. Hauling destinations are shown on Figure 2-10 and in Table 2-6.

[c] Emissions are associated with hauling biosolids through SDAB and SSAB to reach the biosolids management facility in Yuma, Arizona.

Source: Sanitation Districts 2008a; CARB 2006b; EPA 2006c

NEPA No-Federal Action Baseline

The National Environmental Policy Act (NEPA) baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline is not bound to a "no growth" scenario. Therefore, the NEPA baseline may include increases in operations over the life of a project that do not require federal action or approval.

The NEPA baseline is equivalent to the No-Federal-Action Alternative (Alternative 6), which is defined as activities that would occur absent federal action. Absent federal action, only the program elements would occur. Therefore, NEPA baseline emissions would be equivalent to program emissions and the NEPA increment would always be equivalent to the project construction emissions.

The NEPA baseline for construction and operation is presented in Table 5-18. The NEPA baseline would vary in each analysis year depending on implementation of program elements. However, because the project construction emissions are represented by a 30-year constant average, the NEPA increment would also be constant and as such is represented in analysis tables for a single year, 2050. For this reason, the NEPA baseline operational emissions are in some cases lower than the CEQA baseline emissions.

Table 5-18. NEPA Baseline

Time Period		Emissions (pounds per day)					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Construction							
2018–2034	JWPCP Solids Processing	5	29	42	0	21	6
	SJCWRP Process Optimization	5	29	42	0	9	3
	POWRP Process Optimization	4	20	29	0	3	2
	LCWRP Process Optimization	5	28	40	0	6	2
	LBWRP Process Optimization	5	28	40	0	6	2
2035–2040	JWPCP Solids Processing	5	29	42	0	21	6
	SJCWRP Plant Expansion	4	21	30	0	12	3
2041–2050	JWPCP Solids Processing	5	29	42	0	21	6
Operation in SCAB							
2050	JWPCP Stationary Sources	159	363	508	111	141	140
2050	SJCWRP Stationary Sources	31	12	7	0	1	1
2035	SJCWRP Emergency Generator	1	2	2	0	0	0
2050	Biosolids Hauling	10	47	112	1	301	48
Operation in SDAB							
2050	Biosolids Hauling	2	9	21	0	56	9
Operation in SSAB							
2050	Biosolids Hauling	1	7	16	0	43	7
Operation in SJVAB							
2050	Biosolids Hauling	5	22	53	0	143	23
Construction and operational emissions are calculated per emissions methodology in Section 5.4.1.1.							

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the U.S. Army Corps of Engineers' (Corps') geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

5.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for air quality (AQ):

AQ-1. Conflicts with or obstructs implementation of an applicable air quality management plan.

AQ-2. Emissions exceed the SCAQMD daily significance thresholds for construction- and/or operation-related emissions.

SCAQMD significance thresholds are presented in Table 5-19.

Table 5-19. SCAQMD Daily Significance Thresholds

Air Pollutant	Construction Threshold (pounds per day)	Operational Threshold (pounds per day)
VOCs	75	55
CO	550	550
NO_X	100	55
SO_X	150	150
PM_{10}	150	150
$PM_{2.5}$	55	55

Source: SCAQMD 2009a

Program operations would extend into surrounding air basins beyond the SCAB. These operations would be limited to biosolids hauling from the JWPCP and would extend to the SDAB, SSAB, and the SJVAB. The significance thresholds outside the SCAB, which are summarized in Table 5-20, are also considered in this analysis.

Table 5-20. Non-SCAQMD Regional Operational Significance Thresholds

	Emissions Threshold					
Air Basin	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
SDAB[a] (pounds per day)	75	550	250	250	100	55
SSAB[b] (pounds per day)	55	550	55	150	150	55
SJVAB[c] (tons per year)	10	N/A	10	N/A	N/A	N/A

[a] Source: San Diego Air Pollution Control District 1998, Rule 20.1 (thresholds are in pounds per day)
[b] Source: Imperial County Air Pollution Control District 2007 (thresholds are in pounds per day)
[c] Source: San Joaquin Valley Unified Air Pollution Control District 2010 (thresholds are in tons per year)

AQ-3. Emissions exceed SCAQMD's Localized Significance Thresholds.

Localized significance thresholds (LSTs) were developed by SCAQMD as part of the SCAQMD's environmental justice initiative (SCAQMD 2008b). LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and were developed based on the ambient concentrations of that pollutant that could be expected for the project site and surrounding area. LSTs, while voluntary, allow for a significance determination in lieu of air dispersion modeling, particularly for proposed projects of 5 acres or less. The LSTs are conservative, providing public agencies with a method of evaluating ambient air pollutant concentrations without having to conduct air dispersion modeling for all projects.

LST thresholds are based on size (acres) of the disturbed construction area, the ambient air quality around the facility or construction site, and the distance to offsite human receptor. For purposes of a CEQA analysis, the SCAQMD considers a sensitive receptor to be a receptor such as a residence, hospital, prison, and convalescent facility where it is possible that an individual could remain for 24 hours. Schools are also considered sensitive receptors. Commercial and industrial facilities are not considered sensitive receptors because employees do not typically remain on site for a full 24 hours.

The LST methodology requires that PM_{10} and $PM_{2.5}$ emissions be evaluated at sensitive receptors because the averaging period for the state standard is 24 hours and because, per SCAQMD's definition, an individual could remain at a sensitive receptor location for the full 24 hours. The LST methodology requires that for pollutants with standards based on shorter averaging periods, such as NO_2 and CO,

emissions also be evaluated at industrial and commercial receptors because it is reasonable to assume that a worker at these sites could be present for periods of 1 to 8 hours. VOCs do not have an ambient air quality standard and are, therefore, not addressed in the LST methodology. Offsite mobile emissions are not included in the LST evaluation, per LST methodology.

Acreages and distances to the nearest offsite sensitive and commercial/industrial receptors for program and project elements are summarized in Table 5-21 and are shown on Figures 5-5 to 5-19.

Table 5-21. Proposed Construction Sites – Information Used in LST Characterization

	SCAQMD SRA No.	Area Under Construction/ (Operation) Per Day (in acres)	Approximate Distance to Nearest Non-Resident Sensitive Receptor[a]	Approximate Distance to Nearest Commercial/ Industrial Receptor[b]	Approximate Distance to Nearest Resident	Reference Figure
Program Element						
SJCWRP Plant Expansion	11	1 5 (operation)	2,260 feet (school)	50 feet[c]	630 feet	5-5
SJCWRP Process Optimization	11	1 5 (operation)	2,865 feet (school)	35 feet[c]	240 feet	5-5
POWRP Process Optimization	10	1	3,300 feet (school)	285 feet	1,190 feet	5-6
LCWRP Process Optimization	5	1	2,010 feet (school)	210 feet	640 feet	5-7
LBWRP Process Optimization	4	1	2,085 feet (school)	25 feet[c]	1,320 feet	5-8
JWPCP Solids Processing	4	5	2,110 feet (school)	320 feet	420 feet	5-9
Project Element						
JWPCP East Shaft Site	4	5	490 feet (school)	165 feet	215 feet	5-10
JWPCP West Shaft Site	4	5	2,080 feet (school)	110 feet	105 feet	5-11
TraPac Shaft Site	4	1	1,670 feet (school)	0 feet[c]	640 feet	5-12
LAXT Shaft Site	4	5	8,120 feet (school)	275 feet	5,760 feet	5-13
Southwest Marine Shaft Site	4	1	210 feet (prison)	65 feet[c]	3,340 feet	5-14
Angels Gate Shaft Site	3	2	1,940 feet (school)	95 feet	70 feet	5-15
Royal Palms Shaft Site	3	1	1,275 feet (school)	2,760 feet	120 feet	5-16
SP Shelf Riser/Diffuser	N/A	N/A	8.25 miles (school)	7.9 miles	7.8 miles	5-17
PV Shelf Riser/Diffuser	N/A	N/A	2.5 miles (school)	2 miles	2 miles	5-18
Existing Ocean Outfalls	N/A	N/A	2,085 feet (school)	3,400 feet	900 feet	5-19

[a] For PM_{10} and $PM_{2.5}$, the nearest offsite residential or non-residential sensitive receptor is used to calculate the LST.

[b] For NO_X and CO, commercial/industrial facilities are included as potential receptors because NO_2 and CO have 1 and/or 8-hour ambient air quality standards and workers could be present at these sites during this timeframe. The nearest offsite receptor is used to calculate the LST, which could be a commercial/industrial, sensitive, or residential receptor.

[c] South Coast Air Quality Management District's Final LST Method requires that 25 meters (82 feet) be used as minimum distance to receptor.

Source: Distances are based on Figures 5-5 to 5-19

LSTs for the program and project are presented in Table 5-22 and were developed based upon total area (acres) of the emissions source and distance to nearest receptor shown in Table 5-21.

FIGURE 5-5

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from SJCWRP Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

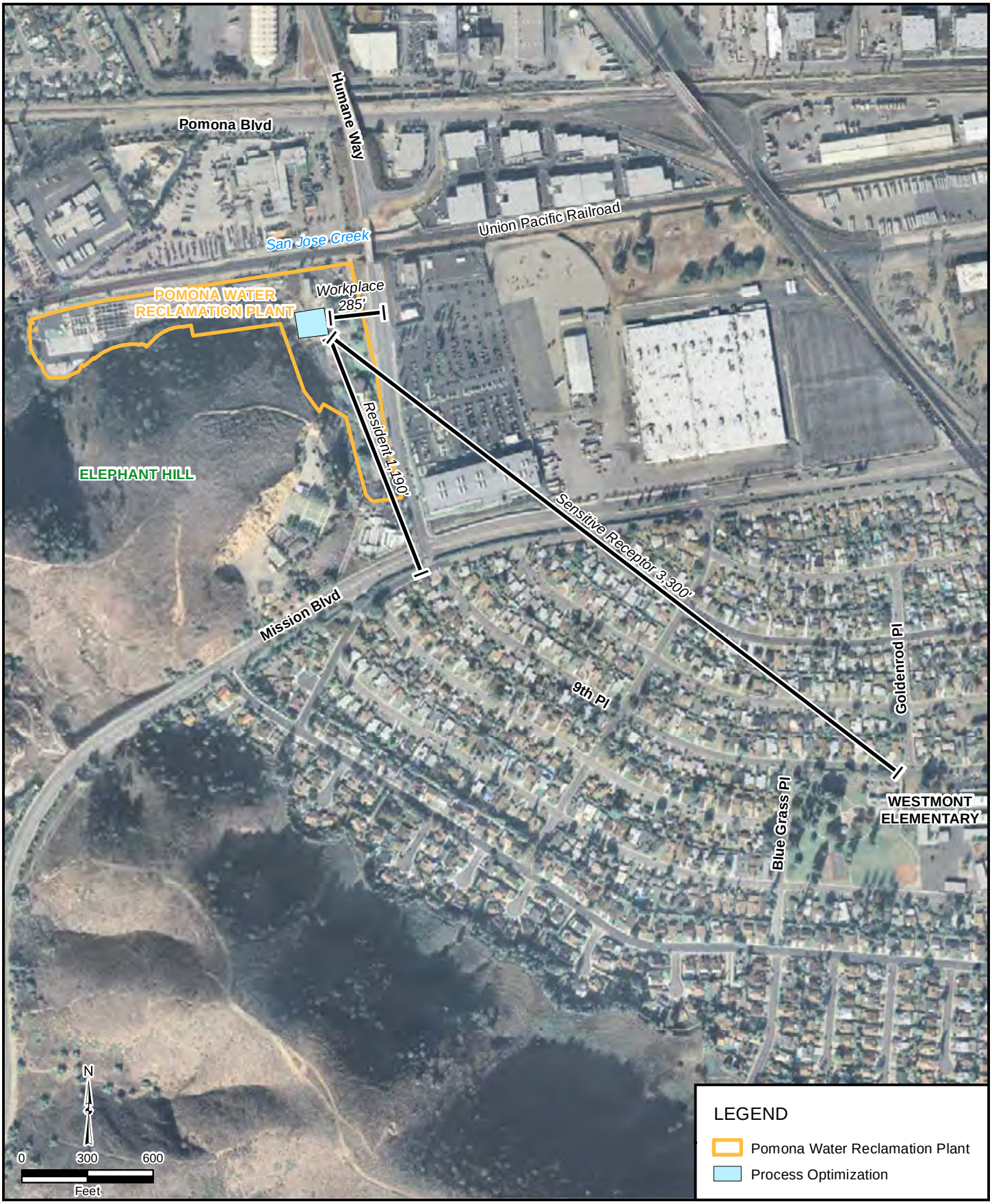


FIGURE 5-6

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from POWRP Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 5-7

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from LCWRP Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

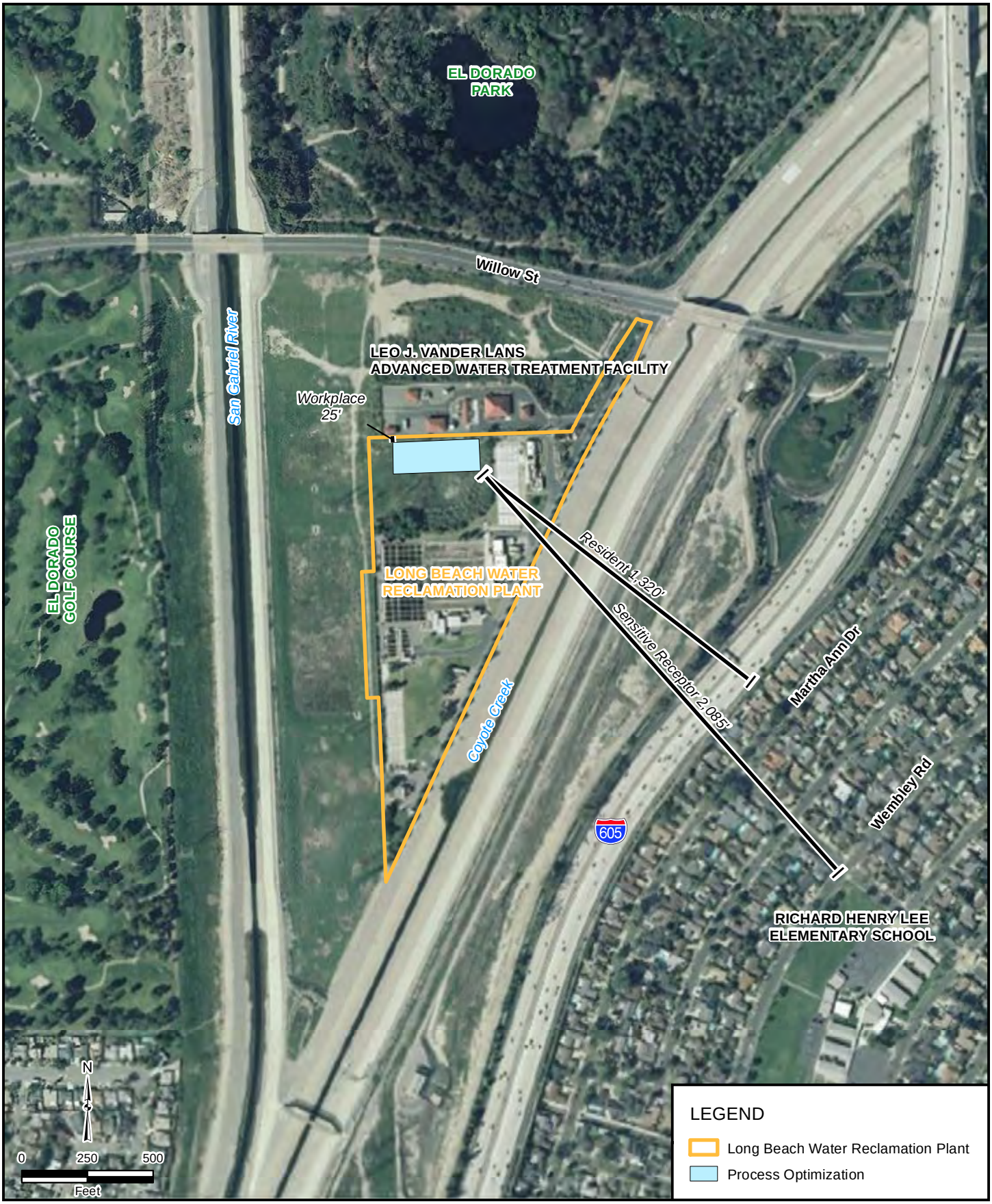


FIGURE 5-8

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from LBWRP Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011

FIGURE 5-9

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from JWPCP Proposed Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 5-10

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from JWPCP East Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 5-11

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from JWPCP West Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

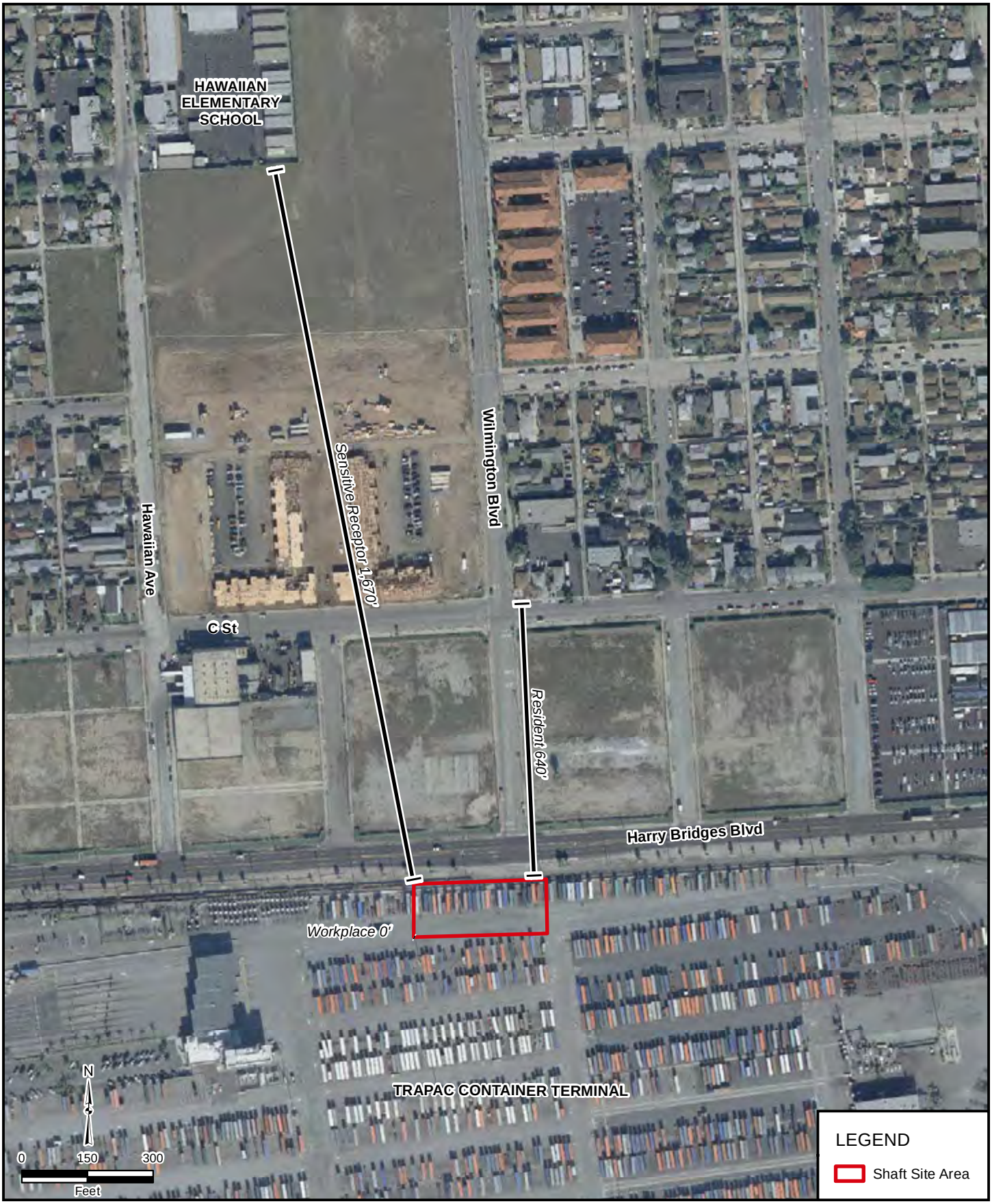


FIGURE 5-12

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from TraPac Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 5-13

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from LAXT Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 5-14

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from Southwest Marine Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 5-15

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from Angels Gate Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

FIGURE 5-16

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from Royal Palms Beach Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

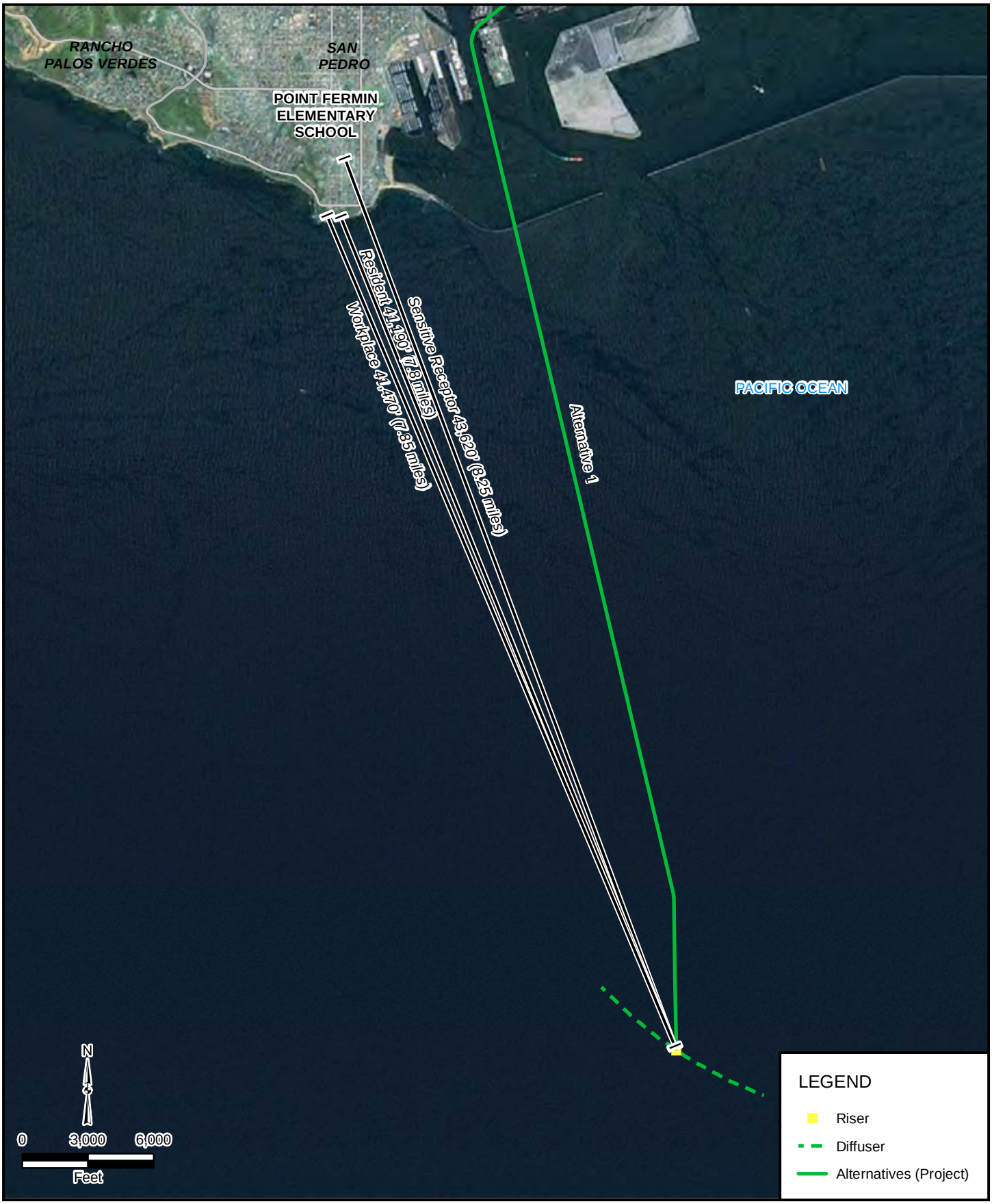


FIGURE 5-17

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from San Pedro Shelf Riser/Diffuser Area

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

FIGURE 5-18

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from Palos Verdes Shelf Riser/Diffuser Area

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

FIGURE 5-19

CLEARWATER Program

Distance to Nearest Sensitive Receptor and Resident from Existing Ocean Outfall in Depths of -20 to -50 Feet

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011

Table 5-22. SCAQMD Localized Significance Thresholds

	Localized Significance Threshold (pounds per day)[a]			
	CO	NO_X[b]	PM_{10}	$PM_{2.5}$
Program Element				
SJCWRP Plant Expansion	1,113	53	29	9
SJCWRP Process Optimization	673	46	13	5
POWRP Process Optimization	911	72	57	18
LCWRP Process Optimization	735	45	27	4
LBWRP Process Optimization	585	32	61	26
JWPCP Solids Processing	1,982	66	58	18
Project Element				
JWPCP East Shaft Site	1,982	66	58	10
TraPac Shaft Site	1,180	38	29	10
LAXT Shaft Site	1,982	66	191	120
Southwest Marine Shaft Site	585	32	13	5
JWPCP West Shaft Site	1,530	68	14	8
Angels Gate Shaft Site	967	73	8	5
Royal Palms Shaft Site	664	51	5	3

[a] CO and NO_X LSTs are based on the shortest distance to either a sensitive or commercial/industrial receptor. PM_{10} and $PM_{2.5}$ LSTs are based on the distance to the nearest non commercial/industrial sensitive receptor.
[b] NO_X LST was scaled to reflect the federal NO_2 standard.
LSTs are not applicable to the riser and diffuser areas because they are located too far from receptors to cause an impact.
Source: SCAQMD LST Methodology (SCAQMD 2008b) and look-up tables, revised on October 2009 (SCAQMD 2009b)

AQ-4. Operational emissions create an objectionable odor at the nearest offsite receptor.

AQ-5. Does not conform to the EPA-approved State Implementation Plan and exceeds de minimis thresholds. This threshold is analyzed for the recommended plan as part of the conformity analysis in Appendix 5-A.

AQ-6. Exposes the public to significant levels of toxic air contaminants.

A project would have a significant impact if it would expose individuals to significant levels of TACs. Impacts would be significant if the maximum incremental cancer risk, the cancer burden, or the noncancer hazard index would be greater than or equal to the TAC thresholds shown in Table 5-23.

Table 5-23. Cancer and Non-Cancer Significance Thresholds

TACs (including carcinogens and noncarcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in area ≥ 1 in 1 million) Hazard Index ≥ 1.0 (project increment)

Source: SCAQMD 2009a

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on air quality before mitigation. Table 5-24 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. Table 5-24 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 5-24. Thresholds Evaluated

	Threshold						
	Alt.	**AQ-1**	**AQ-2**	**AQ-3**	**AQ-4**	**AQ-5[b]**	**AQ-6**
Program Element							
SJCWRP Plant Expansion	1–5	X	X	X	X		X
SJCWRP Process Optimization	1–4	X	X	X	X		X
POWRP Process Optimization	1–4	X	X	X	X		X
LCWRP Process Optimization	1–4	X	X	X	X		X
LBWRP Process Optimization	1–4	X	X	X	X		X
JWPCP Solids Processing	1–5	X	X	X	X		X
JWPCP Biosolids Management	1–5	X	X	X	X		X
Project Element							
Wilmington to SP Shelf (onshore tunnel)[a]	1,2	X	X	X	X		X
Wilmington to SP Shelf (offshore tunnel)	1	X	X	X	X		X
Wilmington to PV Shelf (onshore tunnel)[a]	1,2	X	X	X	X		X
Wilmington to PV Shelf (offshore tunnel)	2	X	X	X	X		X
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3	X	X	X	X		X
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3	X	X	X	X		X
Figueroa/Western to Royal Palms (onshore tunnel)	4	X	X	X	X		X
JWPCP East Shaft Site	1,2	X	X	X	X		X
TraPac Shaft Site	1,2	X	X	X	X		X
LAXT Shaft Site	1,2	X	X	X	X		X
Southwest Marine Shaft Site	1,2	X	X	X	X		X
JWPCP West Shaft Site	3,4	X	X	X	X		X
Angels Gate Shaft Site	3	X	X	X	X		X
Royal Palms Shaft Site	4	X	X	X	X		X
SP Shelf Riser/Diffuser Area	1	X	X	X	X		X
PV Shelf Riser/Diffuser Area	2,3	X	X	X	X		X
Existing Ocean Outfalls Riser/Diffuser Area	1–4	X	X	X	X	X	X

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
[b] Threshold AQ-5 is analyzed for the recommended alternative as part of the federal conformity analysis in Appendix 5-A.
Alt. = alternative

5.4.3 Alternative 1

5.4.3.1 Program and Project

Impact AQ-1 and Impact AQ-2 are evaluated on a regional level and thus analyzed for the combined emissions of construction/operation activities that would occur concurrently for the program and project.

Impact AQ-1. Would Alternative 1 conflict with or obstruct implementation of the applicable air quality management plan?

Construction

CEQA Analysis

The purpose of the 2007 AQMP is to set forth a comprehensive program to bring the SCAB into compliance with all federal and state air quality planning requirements. Therefore, it is appropriate to address compliance on a regional level by evaluating the concurrent impacts associated with the program and the project. Construction of Alternative 1 (Program) would produce emissions of nonattainment pollutants, primarily in the form of diesel exhaust and fugitive dust. The 2007 AQMP proposes emission reduction measures that are designed to bring the SCAB into attainment of the state and national AAQS. The attainment strategies in the AQMP include mobile source control measures and clean fuel programs that are enforced at the state and federal level on engine manufacturers, petroleum refiners, and retailers; as a result, program construction would comply with these control measures. The SCAQMD also adopts AQMP control measures into SCAQMD rules and regulations, which are then used to regulate sources of air pollution in the SCAB. Therefore, compliance with these requirements would ensure that Alternative 1 (Program) would not conflict with or obstruct implementation of the AQMP.

Construction of Alternative 1 (Project) would produce emissions of nonattainment pollutants, primarily in the form of diesel exhaust and fugitive dust. Similar to Alternative 1 (Program), Alternative 1 (Project) would comply with attainment strategies outlined in the 2007 AQMP and enforced at the state and federal level.

Compliance with attainment strategies outlined in the 2007 AQMP and enforced at the state and federal level would ensure that Alternative 1 would not conflict with or obstruct implementation of the AQMP. Impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. Therefore, under NEPA, the impacts associated with construction of the combined program and project for Alternative 1 would be the same as for Alternative 1 (Project), and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Alternative 1 (Program) uses the SCAG's population forecasts for the JOS service area through the year 2050, which are included in the 2007 AQMP. The objective of Alternative 1 (Program) is to provide facilities that are capable of handling flows generated within the region. Alternative 1 (Program), which seeks to accommodate the projected growth in population, is accounted for in the 2007 AQMP emissions forecast. Operation of Alternative 1 (Project), which consists of using a new ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants and as such would not conflict with or obstruct implementation of the AQMP. Alternative 1 would, therefore, not conflict with or obstruct implementation of the AQMP. Impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from operation of program elements. Therefore, under NEPA, the impacts associated with operation of the combined program and project for Alternative 1 would be the same as for Alternative 1 (Project). Operational project emissions would be zero because the tunnel and outfall system would emit no pollutants. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 1 would not conflict with or obstruct implementation of the AQMP. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 would not conflict with or obstruct implementation of the AQMP. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation would result in no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-2. Would Alternative 1 exceed the SCAQMD daily significance thresholds for construction- and/or operation-related emissions?

Criteria pollutants can affect air quality on a regional basis. Criteria pollutants may travel across a regional area, affecting air quality at some distance from the original emissions source. For this reason, SCAQMD established mass daily thresholds for construction and operational activities for criteria pollutants VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. The mass daily thresholds are emissions-based thresholds used to assess the potential significance of criteria air pollutants at the regional level for a reasonable peak day. Peak day emissions that exceed the mass daily significance thresholds may have significant adverse regional effects. To perform this analysis, peak day emissions for the program and project elements were estimated and combined for program and project elements that may occur at the same time.

Construction

CEQA Analysis

Construction of Alternative 1 (Program) would occur between 2018 and 2050 and would result in the temporary emissions of VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. Emissions would originate from mobile construction equipment exhaust, delivery and haul truck exhaust and road dust, employee vehicle exhaust and road dust, tunnel locomotive, and fugitive dust from site work related to excavation activities. Peak day criteria pollutant emissions associated with construction of the various program and project elements

are presented in Table 5-25. Peak day emissions for each program element were determined by totaling emissions from construction activities that could potentially overlap. In instances where more than one possible combination of activities would occur during the same construction phase, emissions were calculated for all possible combinations, and the combination producing the greatest emissions in pounds per day was reported.

Table 5-25. Alternative 1 Under CEQA Peak Day Construction Emissions Without Mitigation

Time Period	Element	Peak Day Emissions (pounds per day)					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Program							
2018–2050	JWPCP Solids Processing	5	29	42	0	21	6
2018–2028	SJCWRP Process Optimization	5	29	42	0	9	3
2018–2028	POWRP Process Optimization	4	20	29	0	3	2
2018–2028	LCWRP Process Optimization	5	28	40	0	6	2
2018–2028	LBWRP Process Optimization	5	28	40	0	6	2
2035–2040	SJCWRP Plant Expansion	4	21	30	0	12	3
2018–2028	Peak Day Emissions[a]	25	133	192	0	45	15
Project							
2015–2015	JWPCP East Shaft Site Construction	25	94	244	0	12	10
2016–2018	Onshore Tunnel Alignment	32	183	371	1	18	15
2016–2017	TraPac Shaft Site Construction	23	88	217	0	11	9
2015–2016	LAXT Shaft Site Construction	25	94	244	0	12	10
2016–2022	Offshore Tunnel Alignment	47	206	432	1	22	18
2015–2016	Southwest Marine Shaft Site Construction	25	94	244	0	12	10
2019–2021	SP Shelf Riser Construction	3	52	49	0	2	1
2021–2022	SP Shelf Diffuser Construction	16	86	148	0	4	4
2021–2022	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2016–2017	Peak Day Emissions[b]	92	477	1,020	3	51	42
Concurrent Peak Day Emissions[c]		94	522	1,020	3	85	49
Significance Thresholds		75	550	100	150	150	55
CEQA Increment[d]		94	522	1,020	3	85	49
CEQA Significant?		Yes	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day program construction emissions would occur during 2018 through 2028 if JWPCP solids processing and process optimization at the WRPs were constructed at the same time.

[b] Peak day project construction emissions would occur in 2016 and 2017 when construction of the TraPac shaft overlaps with both tunneling activities.

[c] Concurrent peak day emissions of VOC, CO, PM_{10}, and $PM_{2.5}$ would occur during 2018 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, and onshore and offshore tunneling occurred concurrently. Concurrent peak day NO_X emissions would occur in both 2016 and 2017 if construction of the onshore and offshore tunnels and the TraPac shaft occurred concurrently. Concurrent peak day SO_X emissions would occur during 2016 if construction of the onshore and offshore tunnels, LAXT shaft, and the JWPCP East shaft occurred concurrently.

[d] CEQA increment is equivalent to concurrent peak day emissions because the CEQA baseline is zero for new construction.

Source: Appendix 5-B

Construction of Alternative 1 (Project) would result in the generation of emissions of VOC, CO, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ over a 96-month period, starting in the first quarter of 2015 and concluding in the fourth quarter of 2022. Emissions would originate from mobile and stationary construction equipment exhaust, tugboat and small boat exhaust, tunnel locomotive, delivery and haul truck exhaust, employee vehicle exhaust, and fugitive dust from site work related to tunneling and excavation activities. Construction-related

exhaust emissions depend on the level of activity, length of construction period, specific construction operations, types of equipment, and number of personnel. Construction-related fugitive dust emissions could vary depending on wind and precipitation conditions and soil moisture content.

For this analysis, emissions resulting from construction-related activities reflect conservative assumptions based on a construction scenario wherein construction would occur in a relatively intensive manner. Because of this conservative assumption, actual emissions would likely be less than those presented here. If construction were delayed or were to occur over a longer period of time, emissions could be reduced because of (1) a more modern and cleaner burning construction equipment fleet mix, and/or (2) a less intensive build-out schedule (i.e., fewer daily emissions occurring over a longer time interval). The construction equipment mix and duration for each construction stage is detailed in the construction spreadsheets provided in Appendix 5-B.

Peak day criteria pollutant emissions associated with Alternative 1 (Project) construction activities are presented in Table 5-25. Peak day emissions for each construction phase were determined by summing emissions from those construction activities that overlap in the proposed construction schedule. In the case where more than one possible combination of activities would occur during the same phase, emissions were calculated for all possible combinations, and the combination producing the greatest emissions was reported.

Due to a lengthy construction period, Alternative 1 (Project) construction could overlap with Alternative 1 (Program) construction, specifically during process optimization of the WRPs. Peak day program and project emissions were estimated in each year during which construction from Alternative 1 (Project) and Alternative 1 (Program) could potentially overlap. The combination of peak day program and project emissions that would result in the greatest concurrent emissions is also shown in Table 5-25.

The concurrent peak day emissions from Alternative 1 construction, as reported in Table 5-25, would occur during different years for different pollutants. Concurrent peak day emissions of VOC, CO, PM_{10}, and $PM_{2.5}$ would occur during 2018 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, and onshore and offshore tunneling occurred concurrently. Concurrent peak day NO_X emissions would occur during 2016 and 2017 if construction of the onshore and offshore tunnels and the Trans Pacific Container Service Corporation (TraPac) shaft occurred concurrently. Concurrent peak day SO_X emissions would occur during 2016 if construction of the onshore and offshore tunnels, Los Angeles Export Terminal (LAXT) shaft, and the JWPCP East shaft occurred concurrently. Impacts would be significant for peak day VOC and NO_X emissions.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. Therefore, under NEPA, the impacts associated with construction of the combined program and project for Alternative 1 would be the same as for Alternative 1 (Project), and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. Impacts under NEPA are presented in Table 5-26. Impacts would be significant for VOC and NO_X emissions.

Table 5-26. Alternative 1 Under NEPA Peak Day Construction Emissions Without Mitigation

Time Period	Project Element	Peak Day Emissions (pounds per day)					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
2015–2015	JWPCP East Shaft Site Construction	25	94	244	0	12	10
2016–2018	Onshore Tunnel Alignment	32	183	371	1	18	15
2016–2017	TraPac Shaft Site Construction	23	88	217	0	11	9
2015–2016	LAXT Shaft Site Construction	25	94	244	0	12	10
2016–2022	Offshore Tunnel Alignment	47	206	432	1	22	18
2015–2016	Southwest Marine Shaft Site Construction	25	94	244	0	12	10
2019–2021	SP Shelf Riser Construction	3	52	49	0	2	1
2021–2022	SP Shelf Diffuser Construction	16	86	148	0	4	4
2021–2022	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2016–2017	Peak Day Emissions[a]	92	477	1020	3	51	42
Significance Thresholds		75	550	100	150	150	55
NEPA Increment		92	477	1020	3	51	42
NEPA Significant?[b]		Yes	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day emissions would occur in 2016 and 2017 when construction of the TraPac shaft overlaps with both tunneling activities.

[b] The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. NEPA significance need not be determined for program and project concurrently because federal activities would occur under project only.

Operation

CEQA Analysis

Operations associated with Alternative 1 (Program) would result in increased solids handling at the JWPCP, increased capacity at the SJCWRP, operation of an additional emergency generator at the SJCWRP, and increased biosolids hauling from the JWPCP. Peak day criteria pollutant emissions associated with these operations are presented in Table 5-27. Note that biosolids would be hauled to various facilities in the region; therefore, emissions from hauling trucks are presented for each air district through which hauling trucks would transit. Operational emissions would result from program elements only; there would be no operational activities resulting in criteria pollutant emissions or impacts from Alternative 1 (Project). As shown in Table 5-27, impacts would be less than significant.

Table 5-27. Alternative 1 Under CEQA Peak Day Operational Emissions Without Mitigation

Program Element[a]	Peak Day Emissions (pounds per day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
SCAB						
JWPCP Stationary Sources	159	363	508	111	141	140
SJCWRP Stationary Sources	31	12	7	0	1	1
SJCWRP Generator	1	2	2	0	0	0
Biosolids Hauling[b]	10	47	112	1	301	48
Total	201	425	628	112	443	189
CEQA Baseline	187	453	751	90	306	161
Thresholds	55	550	55	150	150	55
CEQA Increment[c]	15	-28	-123	21	137	28
CEQA Significant?	No	No	No	No	No	No

Table 5-27 (Continued)

Program Element[a]	Peak Day Emissions (pounds per day)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
SDAB						
Biosolids Hauling[b]	2	9	21	0	56	9
CEQA Baseline	5	19	63	0	37	8
Thresholds	75	550	250	250	100	55
CEQA Increment[c]	-3	-10	-42	0	19	1
CEQA Significant?	No	No	No	No	No	No
SSAB						
Biosolids Hauling[b]	1	7	16	0	43	7
CEQA Baseline	4	14	48	0	29	6
Thresholds	55	550	55	150	150	55
CEQA Increment[c]	-2	-8	-32	0	14	1
CEQA Significant?	No	No	No	No	No	No
SJVAB[d]						
Biosolids Hauling[b]	1	4	10	0	26	4
CEQA Baseline	2	6	19	0	11	2
Thresholds	10	N/A	10	N/A	N/A	N/A
CEQA Increment[c]	-1	-2	-9	0	15	2
CEQA Significant?[e]	No	No	No	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] All program elements would ramp up to maximum operating levels over the life of the Alternative 1 (Program); emissions for all program elements presented reflect maximum operating levels in 2050 except for exhaust from biosolids hauling (see footnote [b]).

[b] Biosolids hauling trips were assumed to increase linearly and reach maximum trips in 2050. Emissions presented represent the year of maximum emissions, which is year 2050 for road dust and year 2020 for exhaust.

[c] The CEQA increment is negative in some cases. This is due to a decrease in emissions from heavy-duty biosolids hauling trucks. Although the number of trucks and vehicle miles travel increase in future years, the normal turnover of the truck fleet to cleaner trucks results in an emissions decrease.

[d] San Joaquin Valley Air Pollution Control District emission thresholds are in tons per year. Includes hauling to the future Westlake Farms Composting Facility in Kings County.

[e] CEQA significance determination reflects program elements only, on a regional basis, because there are no operational impacts for project elements.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. Operation of Alternative 1 (Project), which consists of using a new ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. There would be no impacts under NEPA.

CEQA Impact Determination

Construction of Alternative 1 would exceed SCAQMD's significance thresholds for construction-related emissions for VOC and NO_X, as presented in Table 5-25. Impacts under CEQA would be significant before mitigation. As presented in Table 5-27, operation of Alternative 1 would result in less than significant impacts.

Mitigation

Mitigation measures for construction were derived, where feasible, from SCAQMD mitigation measure tables (SCAQMD 2007b), LAHD Construction Guidelines (also part of the Port of Los Angeles' Clean Air Action Plan), and the Sanitation Districts. The following mitigation measures would be implemented at the start of the construction activity to reduce criteria pollutant emissions associated with construction.

Program

MM AQ-2a. All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap.

MM AQ-2b. All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap.

MM AQ-2c. Fully cover trucks hauling loose material, such as debris or fill, while operating off site.

MM AQ-2d. Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction, provided that it will be available prior to commencing construction and proven reliable.

MM AQ-2e. Route construction trucks away from congested streets or sensitive receptor areas as feasible.

Project

In addition to implementation of MM AQ-2a through MM AQ-2e, the following mitigation measures would also be applied to Alternative 1 (Project):

MM AQ-2f. Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles.

MM AQ-2g. Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.

Residual Impacts

Implementation of MM AQ-2a through MM AQ-2g would reduce construction-related emissions for Alternative 1. Specifically, the following reductions could be achieved through mitigation.

MM AQ-2a. This mitigation would exceed the CARB compliance schedule for on-road heavy-duty trucks shown in Table 5-11 and would address the larger on-road emitters of NO_X and PM. For the purposes of calculating mitigated emissions, a 2007 model year emissions profile was used.

MM AQ-2b. This mitigation would exceed EPA rules for in-use off-road diesel engines and would exceed CARB's compliance schedule and NO_X targets for off-road diesel fleets. Based on SCAQMD Mitigation Measure Tables II-D, II-E, and II-F (SCAQMD 2010b), this mitigation measure would achieve the following emission reductions in comparison with the engine that could have been used:

Table 5-28. Off-Road Engine Emission Rates, Percent Reductions From Tier 1 and Tier 2 to Tier 3 Engines

	Emissions Reduction Achieved (%)					
	Tier 1 to Tier 3			Tier 2 to Tier 3		
Engine Size (hp)	NO_X	ROG	PM	NO_X	ROG	PM
75–99	52	85	46	38	38	0
100–174	59	85	28	39	39	0
175–299	59	85	63	39	39	0
300–600	59	85	63	38	38	0

Should Tier 4 engines be commercially available prior to construction, such engines would be used where feasible. However, given the uncertainty of Tier 4 engines availability prior to the start of construction,

Tier 3 engines were assumed for the purposes of estimating mitigated emissions. Should Tier 4 engines be used, the emission reductions achieved would be as shown in Table 5-29.

Table 5-29. Off-Road Engine Emission Rates, Percent Reduction From Tier 1, Tier 2, and Tier 3 to Tier 4 Engines

	Emissions Reduction Achieved (%)								
	Tier 1 to Tier 4			Tier 2 to Tier 4			Tier 3 to Tier 4		
Engine Size (hp)	NO_X	ROG	PM	NO_X	ROG	PM	NO_X	ROG	PM
75–99	96	88	97	94	50	95	91	20	95
100–174	96	83	95	94	43	93	89	7	93
175–299	96	86	96	94	43	90	89	7	90
300–600	96	86	96	93	42	90	89	7	90

MM AQ-2f. For purposes of estimating mitigated emissions, Tier 3 engines are assumed given the uncertainty associated with Tier 4 marine engines being available at the Port of Los Angeles prior to the start of construction; emission reductions due to Tier 4 engines are not quantified in emission calculations.

MM AQ-2g. This mitigation measure would directly address the highest emissions source of NO_X associated with Alternative 1 (Project) by utilizing the cleanest locomotive engine commercially available. An electric engine was considered but found not to be viable due to the inability to stay charged given the number of trips back and forth in the tunnel; the distance; the need for a charging station in the tunnel where there is potential to encounter water during tunneling, creating a safety hazard; and the need to have an uninterrupted power source to transport excavated material and personnel. This mitigation would exceed the EPA emission standards applicable to in-use locomotive engines.

The remaining mitigation measures are not quantified in emission calculations.

Peak day criteria pollutant emissions associated with mitigated construction are presented in Table 5-30 for Alternative 1. Due to a lengthy construction period, Alternative 1 (Project) construction could overlap with Alternative 1 (Program) construction, specifically during process optimization of the WRPs. Concurrent peak day program and project emissions were estimated in each year during which construction from Alternative 1 (Project) and Alternative 1 (Program) could potentially overlap. The combination of peak day program and project emissions that would result in the greatest concurrent emissions is reported in Table 5-30.

Table 5-30. Alternative 1 Under CEQA Peak Day Construction Emissions With Mitigation

		Peak Day Emissions (pounds per day)					
Time Period	Element	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Program							
2018–2050	JWPCP Solids Processing	2	29	16	0	21	5
2018–2028	SJCWRP Process Optimization	2	29	16	0	8	2
2018–2028	POWRP Process Optimization	1	20	13	0	3	1
2018–2028	LCWRP Process Optimization	2	28	15	0	5	2
2018–2028	LBWRP Process Optimization	1	28	14	0	5	2
2035–2040	SJCWRP Plant Expansion	1	21	10	0	12	3
2018–2028	Peak Day Emissions[a]	8	133	73	0	41	12

Table 5-30 (Continued)

		Peak Day Emissions (pounds per day)					
Time Period	**Element**	**VOC**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Project							
2015–2015	JWPCP East Shaft Site Construction	8	68	81	0	5	4
2016–2018	Onshore Tunnel Alignment	16	147	125	1	8	5
2016–2017	TraPac Shaft Site Construction	8	67	78	0	5	4
2015–2016	LAXT Shaft Site Construction	8	68	81	0	5	4
2016–2022	Offshore Tunnel Alignment	18	161	155	1	9	6
2015–2016	Southwest Marine Shaft Site Construction	8	68	81	0	5	4
2019–2021	SP Shelf Riser Construction	3	51	42	0	1	1
2021–2022	SP Shelf Diffuser Construction	5	85	44	0	3	2
2021–2022	Existing Ocean Outfalls Rehabilitation	1	29	20	0	1	1
2016–2017	Peak Day Emissions[b]	41	375	358	2	22	15
Concurrent Peak Day Emissions[c]		41	375	358	2	58	23
Significance Thresholds		75	550	100	150	150	55
CEQA Increment[d]		41	375	358	2	58	23
CEQA Significant?		No	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day program construction emissions would occur during 2018 through 2028 if JWPCP solids processing and process optimization at the WRPs were constructed at the same time.

[b] Peak day project construction emissions would occur in 2016 and 2017 when TraPac shaft site construction overlaps with both tunneling activities.

[c] Concurrent peak day emissions of VOC, CO, NO_X, and SO_X would occur in 2016 and 2017 if construction of the onshore and offshore tunnels and the TraPac shaft site occurred concurrently. Concurrent peak day PM_{10} and $PM_{2.5}$ emissions would occur during 2018 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, and onshore and offshore tunnels occurred concurrently.

[d] CEQA increment is equivalent to maximum concurrent peak day emissions because the CEQA baseline is zero for new construction.

The peak day emissions from concurrent project and program construction, as reported in Table 5-30, would occur during different years for different pollutants. Concurrent peak day emissions of VOC, CO, NO_X, and SO_X would occur in 2016 and 2017 if construction of the onshore and offshore tunnels and the TraPac shaft site occurred concurrently. Concurrent peak day PM_{10} and $PM_{2.5}$ emissions would occur during 2018 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, and onshore and offshore tunnels occurred concurrently.

The CEQA residual impact determination for construction is made on a regional level for Alternative 1 in Table 5-30. Although implementation of the mitigation measures would reduce emissions, NO_X would still exceed the SCAQMD significance threshold following mitigation for Alternative 1 under CEQA. Therefore, residual impacts would be significant and unavoidable on a regional level during construction. Impacts would be less than significant during operation.

NEPA Impact Determination

Construction of Alternative 1 would exceed the SCAQMD significance threshold for construction-related emissions for VOC and NO_X, as presented in Table 5-26. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 would result in no impacts.

Mitigation

Program
Implement MM AQ-2a through MM AQ-2e.

Project
Implement MM AQ-2a through MM AQ-2g.

Residual Impacts
Implementation of MM AQ-2a through MM AQ-2g would reduce construction-related emissions for Alternative 1. See residual impacts under the CEQA impact determination for reductions that could be achieved through MM AQ-2a through MM AQ-2g.

Peak day criteria pollutant emissions associated with mitigated construction are presented in Table 5-31 for Alternative 1.

Table 5-31. Alternative 1 Under NEPA Peak Day Construction Emissions With Mitigation

		Peak Day Emissions (pounds per day)					
Time Period	**Project Element**	**VOC**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2015–2015	JWPCP East Shaft Site Construction	8	68	81	0	5	4
2016–2018	Onshore Tunnel Alignment	16	147	125	1	8	5
2016–2017	TraPac Shaft Site Construction	8	67	78	0	5	4
2015–2016	LAXT Shaft Site Construction	8	68	81	0	5	4
2016–2022	Offshore Tunnel Alignment	18	161	155	1	9	6
2015–2016	Southwest Marine Shaft Site Construction	8	68	81	0	5	4
2019–2021	SP Shelf Riser Construction	3	51	42	0	1	1
2021–2022	SP Shelf Diffuser Construction	5	85	44	0	3	2
2021–2022	Existing Ocean Outfalls Rehabilitation	1	29	20	0	1	1
2016–2017	Peak Day Emissions[a]	41	375	358	2	22	15
Significance Thresholds		75	550	100	150	150	55
NEPA Increment		41	375	358	2	22	15
NEPA Significant?[b]		No	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
[a] Peak day construction emissions would occur in 2016 and 2017 when TraPac shaft site construction overlaps with both tunneling activities.
[b] The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. NEPA significance need not be determined for program and project concurrently because federal activities would occur under project only.

As shown in Table 5-31, although implementation of MM AQ-2a through MM AQ-2g would reduce construction-related emissions, NO_X emissions would continue to exceed the SCAQMD significance threshold following mitigation for Alternative 1 under NEPA. Therefore, residual impacts would be significant and unavoidable during construction. There would be no impacts during operation.

5.4.3.2 Program

Impacts AQ-3, AQ-4, and AQ-6 are evaluated on a localized level and thus analyzed separately for program and project.

Impact AQ-3. Would Alternative 1 (Program) result in emissions in excess of SCAQMD's Localized Significance Thresholds?

SCAQMD has developed a set of mass emissions rate look-up tables that can be used to evaluate localized impacts for NO_X, CO, PM_{10}, and $PM_{2.5}$ resulting from construction and operational onsite emissions. VOC does not have an ambient air quality standard and is, therefore, not addressed in the LST methodology. LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance the NAAQS or CAAQS at the nearest human receptor, taking into account ambient concentrations in each source receptor area (SRA), project site, and distance to the receptor. If onsite emissions from proposed construction are below the LST emission levels found in the LST mass rate look-up tables for the project site's SRA, then project emissions are not expected to cause a significant localized air quality impact.

Per SCAQMD's policy, only onsite emissions were considered for purposes of comparison with the LST mass rate look-up tables (i.e., consistent with SCAQMD LST Guidelines, offsite delivery/haul truck activity and employee trips were not considered in the evaluation of localized impacts).

San Jose Creek Water Reclamation Plant – Plant Expansion; San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization; Joint Water Pollution Control Plant – Solids Processing

Construction

The LST methodology requires the knowledge of receptor distances from the source. Existing sensitive receptor locations surrounding the various WRPs and the JWPCP are known, but may change in the future with future development. The distance to each site's nearest existing sensitive receptor is summarized in Table 5-21 and shown on Figures 5-5 to 5-9.

Per SCAQMD's guidance, only onsite construction emissions were considered for the purpose of comparison with the LST mass rate look-up tables. Onsite construction emissions for the Alternative 1 (Program) elements are presented in Table 5-32. Impacts would be less than significant.

Table 5-32. Alternative 1 (Program) Localized Construction Emissions Without Mitigation

		Peak Day Emissions (pounds per day)			
Time Period	**Program Element**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
2035–2040	SJCWRP Plant Expansion	18	24	12	3
	SCAQMD LSTs[a]	1,113	53	29	9
	CEQA Increment	18	24	12	3
	CEQA Significant?	No	No	No	No
2018–2020	SJCWRP Process Optimization	23	32	8	3
	SCAQMD LSTs[a]	673	46	13	5
	CEQA Increment	23	32	8	3
	CEQA Significant?	No	No	No	No
2018–2019	POWRP Process Optimization	15	22	3	1
	SCAQMD LSTs[a]	911	72	57	18
	CEQA Increment	15	22	3	1
	CEQA Significant?	No	No	No	No

Table 5-32 (Continued)

Time Period	Program Element	Peak Day Emissions (pounds per day)			
		CO	NO_X	PM_{10}	$PM_{2.5}$
2018–2019	LCWRP Process Optimization	23	32	5	2
	SCAQMD LSTs[a]	735	45	27	4
	CEQA Increment	23	32	5	2
	CEQA Significant?	No	No	No	No
2018–2019	LBWRP Process Optimization	23	32	5	2
	SCAQMD LSTs[a]	585	32	61	26
	CEQA Increment	23	32	5	2
	CEQA Significant?	No	No	No	No
2018–2050	JWPCP Solids Processing	23	31	21	5
	SCAQMD LSTs[a]	1,982	66	58	18
	CEQA Increment	23	31	21	5
	CEQA Significant?	No	No	No	No

[a] LSTs are based on distances to receptors and site acreages, presented in Table 5-21. NO_X LST was scaled to reflect the federal NO_2 standard.

Operation

Alternative 1 (Program) would result in the expansion and addition of an emergency generator at the SJCWRP, as well as increased solids handling at the JWPCP. The additional emergency generator at the SJCWRP would comply with SCAQMD Rules 1470 and 1472, and the control strategy, if any were required, would be identified at the time of permitting.

Although the locations of construction activities associated with the SJCWRP expansion and increased solids handling at the JWPCP were known at the time of the analysis, the specific locations of future sources of emissions (flares, boilers, emergency generator) were not. Localized air quality impacts are dependent upon the specific geographic location of the source of emissions and the nearest receptors. Because Alternative 1 (Program) emission source locations were unknown at the time of this analysis, specifying distances from those future sources to receptors would be speculative. In addition, sources associated with Alternative 1 (Program) would require SCAQMD permitting; a full analysis would be conducted during permitting. As such, no determination of significance is made at this time. Any impacts resulting from operations of plant expansion and solids processing will be assessed in a subsequent CEQA document. Process optimization would involve the operation of electrical pumps; therefore, there would be no operational emissions associated with process optimization.

Joint Water Pollution Control Plant – Biosolids Management

Operation

The SCAQMD does not recommend the use of the LST methodology to evaluate mobile sources. However, biosolids management would require the use of only 20 additional trucks per day from the JWPCP to beneficial use and landfill locations. Although some criteria pollutant emissions would be released, the emissions would be associated with a small number of trucks and the trucks would be transient. These mobile sources would be too low to affect localized ambient air quality. Impacts would be less than significant.

CEQA Impact Determination

As presented in Table 5-32, construction of Alternative 1 (Program) would not result in emissions in excess of SCAQMD's LSTs. Impacts would be less than significant. Operation of process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP would result in no impacts. Operation of biosolids management at the JWPCP would result in less than significant impacts. No determination of significance was made at this time for operation of plant expansion at the SJCWRP and of solids processing facilities at the JWPCP for Alternative 1 (Program).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-4. Would Alternative 1 (Program) emissions create an objectionable odor at the nearest offsite receptor?

Impact AQ-4 addresses the potential generation of odors during program construction and operation and whether such odors would affect nearby offsite receptors. Potential sources of odors during construction activities would arise from equipment exhaust. Odors from these sources would be localized and generally confined to the construction site. Typical construction techniques would be utilized, and the odors would be typical of most construction sites. Additionally, the odors would be temporary, occurring when equipment is operating. Construction activities would be required to comply with SCAQMD's Nuisance Rule 402 and as such would not create a significant level of objectionable odors.

The Sanitation Districts have an extensive odor control program to strategically control odors during operation of their facilities. These programs would continue to be in place during future improvements identified under the program, as discussed herein.

San Jose Creek Water Reclamation Plant – Plant Expansion and Process Optimization

Construction

Construction activities associated with plant expansion and process optimization at the SJCWRP would be localized, temporary, and typical of most construction sites. Construction activities would be required to comply with SCAQMD's Nuisance Rule 402 and, as such, would not create a significant level of objectionable odors. Impacts during construction would be less than significant.

Operation

The primary source of odors at wastewater facilities is hydrogen sulfide, which is generated from bacteria in the wastewater where oxygen levels are very low.

Current odor control technology employed at the SJCWRP consists of a combination of process covers and seals, and optimum ventilation rates. Where necessary, additional odor control measures are taken, such as the use of activated carbon absorbers and chemical treatment of wastewater. There have been no odor violations from operation of the SJCWRP between the years 2003 and 2010 (SCAQMD 2012). Plant expansion and process optimization could potentially be a source of odors. The current odor control

technologies would continue to be implemented. In addition, the SJCWRP would adhere to SCAQMD rules and regulations.

As shown on Figure 5-2, winds near the SJCWRP are predominately from the northwest and west-northwest. Therefore, in the case that odors are emitted from the SJCWRP, receptors located southeast and east-southeast of the project site would be the most likely to be exposed to odors. However, given the various odor controls as well as compliance with SCAQMD rules (including Rules 402), nuisance odors are not expected to result from process optimization and plant expansion at the SJCWRP. Impacts would be less than significant.

Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

Construction activities associated with process optimization at the POWRP, LCWRP, and LBWRP would be localized, temporary, and typical of most construction sites. Construction activities would be required to comply with SCAQMD's Nuisance Rule 402 and, as such, would not create a significant level of objectionable odors. Impacts during construction would be less than significant.

Operation

Current odor control technology employed at the POWRP, LCWRP, and LBWRP consists of a combination of process covers and seals, and optimum ventilation rates. Where necessary, additional odor control measures are taken, such as the use of activated carbon absorbers and chemical treatment of wastewater. There are no odor violations from operation of the POWRP, LCWRP, and LBWRP between the years 2003 and 2010 (SCAQMD 2012). Process optimization could potentially be a source of odors. The current odor control technologies would continue to be implemented. In addition, the POWRP, LCWRP, and LBWRP would adhere to SCAQMD rules and regulations.

As shown on Figure 5-2, winds near the POWRP are predominately from the northwest and west-northwest. Therefore, in the case that odors are emitted from the POWRP, receptors located southeast and east-southeast of the project site would be the most likely to be exposed to odors. As shown on Figure 5-3, winds near the LCWRP are predominately from the west-southwest. Therefore, in the case that odors are emitted from the LCWRP, receptors located east-northeast of the project site would be the most likely to be exposed to odors. As shown on Figure 5-4, winds near the LBWRP are predominately from the west-southwest. Therefore, in the case that odors are emitted from the LBWRP, receptors located east-northeast of the project site would be the most likely to be exposed to odors. However, given the various odor control technologies as well as compliance with SCAQMD rules, nuisance odors are not expected to result from process optimization at the POWRP, LCWRP, and LBWRP. Impacts would be less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

Construction activities associated with solids processing at the JWPCP would be localized, temporary, and typical of most construction sites. Construction activities would be required to comply with SCAQMD's Nuisance Rule 402 and, as such, would not create a significant level of objectionable odors. Impacts during construction would be less than significant.

Operation

The Sanitation Districts have made considerable investments in odor control efforts and have conducted odor control research at the JWPCP. Several areas within primary treatment have been retrofitted with tight, flat, gasketed, aluminum covers. Air trapped underneath the sedimentation tank covers, skimmings trough covers, and primary effluent channel covers is directed to a two-stage process that includes biotrickling scrubbers followed by activated carbon. Foul air from solids processing is collected and transported to two independent biofilter treatment systems (Sanitation Districts 2010a).

The JWPCP also utilizes a community relations program, which includes a 24-hour odor complaint hotline, immediate response to complaints, newsletters to the public, community meetings, and a citizens' advisory committee, which provides a forum for community input (Sanitation Districts 2010b). Plant personnel immediately follow up on odor complaints and efforts are made to determine the source of the odor. Although the proposed sludge dewatering and stabilization could potentially be a source of odors, the odor control technologies already in place have proven to be effective in their control. The current odor control technologies would continue to be implemented. In addition, the JWPCP would adhere to SCAQMD rules and regulations.

As shown on Figure 5-4, winds near the JWPCP are predominately from the west. Therefore, in the case that odors are emitted from the JWPCP, receptors located east of the project site would be the most likely to be exposed to odors. However, given the extensive odor control systems at the JWPCP and the continued compliance with SCAQMD rules, nuisance odors are not expected to result from solids processing at the JWPCP. Impacts would be less than significant.

Joint Water Pollution Control Plant – Biosolids Management

Operation

Increased solids processing at the JWPCP would result in an increase in the number of biosolids hauling truck trips, which would primarily be in the form of diesel-powered heavy-duty trucks. Some individuals might find diesel combustion emissions to be objectionable in nature, although quantifying the odorous impacts of these emissions on the public is difficult. The mobile nature of transportation emission sources operating both onsite and offsite would help to disperse diesel emissions. As shown on Figure 5-4, winds near the JWPCP are predominately from the west. However, the distance between these emission sources and receptors is expected to be far enough to disperse these emissions and to reduce their impact to below objectionable odor levels. Impacts would be less than significant.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not create objectionable odors at offsite receptors. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-6. Would Alternative 1 (Program) expose the public to significant levels of toxic air contaminants?

San Jose Creek Water Reclamation Plant – Plant Expansion; San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization; Joint Water Pollution Control Plant – Solids Processing

Construction

The greatest potential for construction-related TAC emissions would be from diesel particulate emissions associated with heavy equipment operations during site grading activities. Construction activities are short-term in nature and, as such, the cancer risk exposure from diesel-related construction equipment is also short-term. The construction activities associated with Alternative 1 (Program) may potentially take up to 31 years, but would occur in various locations throughout the SCAB, so they would not overlap or impact a common receptor. Furthermore, construction activities in any single location would be transitory and short-term. The assessment of cancer risk is typically based on a 70-year exposure period. Because exposure to diesel exhaust would be well below the 70-year exposure period at any given location, construction of Alternative 1 (Program) is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. Impacts would be less than significant.

Operation

Alternative 1 (Program) would change facility operations at the JWPCP due to solids processing and SJCWRP plant expansion only. The potential for TAC emissions due to program operations at these facilities are discussed herein. Process optimization would involve the operation of electrical pumps, which would not result in TAC pollutants. Therefore, there would be no impacts due to process optimization.

Operation-related TAC emissions for the JWPCP were scaled based on the SCAQMD Rule 1402 facility-wide quantitative health risk analysis (HRA) prepared as part of Assembly Bill 2588 reporting requirements (Sanitation Districts 2006a) and the AERs submitted to the SCAQMD by the Sanitation Districts. The 2006 HRA contained three components: individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index. Individual lifetime cancer risk is the additional chance for a person to contract cancer after a lifetime of exposure to program emissions. The “lifetime” exposure duration assumed in this HRA is 70 years for a residential receptor, assuming the receptor is exposed to emissions for 24 hours a day along with other assumptions that tend to overstate the risk. The chronic hazard index is a ratio of the long-term average concentrations of TACs in the air to established reference exposure levels. A chronic hazard index below 1.0 indicates that adverse noncancer health effects from long-term exposure are not expected. Similarly, the acute hazard index is a ratio of the short-term average concentrations of TACs in the air to established reference exposure levels. An acute hazard index below 1.0 indicates that adverse noncancer health effects from short-term exposure are not expected.

The JWPCP 2008 baseline was established by comparing the emissions reported in the 2008 AER to the emissions reported in the 2004/05 AER because the 2006 HRA was based on 2004/2005 AER emissions. The emission sources affected by Alternative 1 (Program) were scaled from the 2008 levels based on the expected potential increase in population and solids handling to the JWPCP service area of 23 percent (Sanitation Districts 2008a). The results of this comparison are presented in Table 5-33. Impacts would be less than significant.

Table 5-33. Alternative 1 (Program) Cancer and Hazard Index Impacts Without Mitigation

Year/Analysis	Residential Cancer Risk (per million)	Offsite Worker Cancer Risk (per million)	Chronic Hazard Index	Acute Hazard Index
JWPCP Solids Processing				
2006 HRA	7.20	1.83	0.031	0.17
2008 Baseline	5.28[b]	1.34	0.023	0.12
2050 Buildout	6.28	1.60	0.027	0.15
CEQA Increment	1.00	0.26	0.004	0.03
SCAQMD Threshold	10	10	1.0	1.0
CEQA Significant?	No	No	No	No
SJCWRP Plant Expansion				
2003 HRA[a]	2.3	N/A	N/A	N/A
2008 Baseline	1.8[b]	N/A	N/A	N/A
2050 Buildout	3.1			
CEQA Increment	1.4	N/A	N/A	N/A
SCAQMD Threshold	10	10	1.0	1.0
CEQA Significant?	No	N/A	N/A	N/A

[a] SJCWRP 2003 HRA evaluated the maximum individual cancer risk only.
[b] Decreases are a result of lower wastewater flows (facility throughput)
Source: Sanitation Districts 2006a; Sanitation Districts 2003; SCAQMD 2005; SCAQMD 2009c

Operation-related cancer risk for the SJCWRP was scaled based on the 2.3 in a million cancer risk determined in the latest available 2003 SJCWRP HRA (Sanitation Districts 2003). It was assumed that cancer risk would be directly proportional to facility throughput. The SJCWRP 2008 baseline was, therefore, established by scaling 2003 facility throughput by 2008 throughput. Throughput at the SJCWRP was 93.6 MGD in 2003. The flow decreased in 2008 to 72 MGD.

Expansion of the plant under Alternative 1 (Program) would add an emergency generator and increase wastewater treatment capacity at the SJCWRP West plant to 125 MGD (an increase of 74 percent from the 2008 baseline). This expansion increase would in turn affect DPM emissions from the emergency generator and volatile TAC emissions associated with wastewater treatment. Applying the flow increase associated with plant expansion to the documented cancer risk would result in a 1.3 in a million increase in cancer risk and a total facility cancer risk of 3.1 in a million. This approach conservatively assumes that all sources would be equally affected by the plant expansion. In actuality, only sources affected by the SJCWRP West expansion would contribute to an increase in cancer risk. Therefore, this methodology represents a conservative estimate of cancer risk. A more refined screening methodology that considers only those sources affected by the SJCWRP West expansion would result in a health risk smaller than that identified here.

It should also be noted that HRA methodology has changed since the time of the 2003 SJCWRP HRA. Health effects values (e.g., reference exposure levels) and exposure pathway variates (e.g., breathing rates) have been updated by the Office of Environmental Health Hazard Assessment (OEHHA), the agency tasked with developing HRA guidelines. Air dispersion modeling software used to evaluate the dispersion of air contaminants has also changed. These changes, if applied to an individual HRA, may result in a different cancer risk determination. However, if the same changes are applied to both the baseline and the proposed activities, the CEQA increment and subsequent CEQA significance determination would likely not change.

Joint Water Pollution Control Plant – Biosolids Management

Operation

Biosolids management would require the use of only 20 additional trucks per day from the JWPCP to beneficial use and landfill locations. Although some DPM would be released, the emissions would be associated with a small number of trucks and the trucks would be transient. These mobile sources would be too low to affect chronic or nonchronic health impacts. Impacts would be less than significant.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not expose the public to significant levels of TACs. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant. Although impacts would be less than significant and no mitigation is required, implementation of MM AQ-2a through MM AQ-2e under Impact AQ-2 would further reduce exposure to TACs.

5.4.3.3 Project

Impacts AQ-3, AQ-4, and AQ-6 are evaluated on a localized level and, thus, analyzed separately for project and program.

Impact AQ-3. Would Alternative 1 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore and Offshore); Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine; Riser/Diffuser Area – San Pedro Shelf and Existing Ocean Outfalls

Construction

CEQA Analysis

As previously discussed in Section 5.4.3.2 under Impact AQ-3, the LST methodology requires the knowledge of receptor distances from the source. Existing sensitive receptor locations surrounding the various project construction sites are known, but may change in the future with future development. The distance to each site's nearest existing sensitive receptor is summarized in Table 5-21 and shown on Figures 5-10 to 5-19.

Per SCAQMD's policy, only onsite construction emissions at the shaft and access sites were considered for purposes of comparison with the LST mass rate look-up tables. These emissions consist of emissions from construction of the shaft sites themselves as well as emissions from tunneling activities associated with those sites, which although would take place off site, would emit through the tunnel openings at the shaft sites and are, for the purpose of this document, considered onsite construction emissions. The construction of shaft sites would occur prior to tunneling associated with those sites. Therefore, construction of sites and tunneling associated with those sites were considered as separate localized events.

Under this alternative, after completion of the LAXT shaft site, two TBMs would tunnel concurrently, moving north and south from the LAXT shaft site. As the TBMs bore through the tunnel alignment, emissions would travel from the back of the TBM through the tunnel and be released at the tunnel opening at the nearest shaft site. All tunneling emissions, from the northbound and southbound tunnels, would be emitted at the LAXT shaft site until the northbound TBM passes the TraPac site and the southbound TBM passes the Southwest Marine site. Once the northbound TBM passes the TraPac site, emissions from the northbound tunnel would be emitted at the TraPac site. Once the southbound TBM passes the Southwest Marine site, emissions from the southbound tunnel would be emitted at the Southwest Marine site. Accordingly, all onshore tunnel emissions would be localized at the TraPac shaft site, and all offshore tunnel emissions would be localized at the LAXT and Southwest Marine shaft sites.

Onsite construction emissions for Alternative 1 (Project) elements are presented in Table 5-34. Impacts would be significant for NO_X at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites during site construction. Impacts would also be significant for NO_X for the onshore tunnel, with emissions localized at the TraPac shaft site, and for the offshore tunnel, with emissions localized at the LAXT and Southwest Marine shaft sites.

The Alternative 1 (Project) riser and diffuser area is located several miles out to sea at the edge of the San Pedro Shelf (SP Shelf). The existing ocean outfalls are also located out to sea at the edge of the Palos Verdes Shelf (PV Shelf). Because there are no sensitive receptors within the LST methodology limit of 1,640 feet (500 meters) of these construction areas, per SCAQMD LST methodology, there is no potential for localized construction emissions to affect sensitive receptors.

Table 5-34. Alternative 1 (Project) Localized Construction Emissions Without Mitigation

		Peak Day Emissions (pounds per day)			
Time Period	**Project Element**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
2015–2015	JWPCP East Shaft Site Construction	40	97	4	3
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,982	66	58	10
	CEQA/NEPA Increment	40	97	4	3
	CEQA/NEPA Significant?	No	Yes	No	No
2016–2017	TraPac Shaft Site Construction	39	88	4	3
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,180	38	29	10
	CEQA/NEPA Increment	39	88	4	3
	CEQA/NEPA Significant?	No	Yes	No	No
2015–2016	LAXT Shaft Site Construction	40	97	4	3
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,982	66	191	120
	CEQA/NEPA Increment	40	97	4	3
	CEQA/NEPA Significant?	No	Yes	No	No
2015–2016	Southwest Marine Shaft Site Construction	40	97	4	3
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	585	32	13	5
	CEQA/NEPA Increment	40	97	4	3
	CEQA/NEPA Significant?	No	Yes	No	No

Table 5-34 (Continued)

Time Period	Project Element	Peak Day Emissions (pounds per day)			
		CO	NO_X	PM_{10}	$PM_{2.5}$
2016–2018[b]	Onshore Tunneling Emissions at the TraPac Shaft Site	86	148	6	5
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs	1,180	38	29	10
	CEQA/NEPA Increment	86	148	6	5
	CEQA/NEPA Significant?	No	Yes	No	No
2016–2018[b]	Offshore Tunneling Emissions at the LAXT Shaft Site	171	296	12	10
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,982	66	191	120
	CEQA/NEPA Increment	171	296	12	10
	CEQA/NEPA Significant?	No	Yes	No	No
2016–2018[b]	Offshore Tunneling Emissions at the Southwest Marine Shaft Site	86	148	6	5
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs	585	32	13	5
	CEQA/NEPA Increment	86	148	6	5
	CEQA/NEPA Significant?	No	Yes	No	No

CEQA and NEPA baselines are zero for new construction at each construction location.

[a] LSTs are based on distances to receptors and site acreages, presented in Table 5-21. NO_X LST was scaled to reflect the federal NO_2 standard.

[b] The time period for tunnel construction includes both the onshore and offshore segments. Tunneling at each shaft site would not occur until after construction of the shaft, which is required to facilitate tunnel construction.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Operation of Alternative 1 (Project), which consists of using a new ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. There would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure.

CEQA Impact Determination

As presented in Table 5-34, construction of the onshore and offshore tunnel, and at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) would result in emissions in excess of SCAQMD's LST for NO_X. Impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in no impacts.

Mitigation

Implement MM AQ-3a through MM AQ-3e and MM AQ-3g (same as MM AQ-2a through MM AQ-2e and MM AQ-2g).

Residual Impacts

Implementation of MM AQ-3a through MM AQ-3e and MM AQ-3g would reduce construction impacts to below SCAQMD LSTs for all pollutants for Alternative 1 (Project). Localized criteria pollutant emission associated with mitigated construction for Alternative 1 (Project) are presented in Table 5-35. Residual impacts would be less than significant.

Table 5-35. Alternative 1 (Project) Localized Construction Emissions With Mitigation

		Peak Day Emissions (pounds per day)			
Time Period	**Project Element**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
2015–2015	JWPCP East Shaft Site Construction	40	17	2	2
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,982	66	58	10
	CEQA/NEPA Increment	40	17	2	2
	CEQA/NEPA Significant?	No	No	No	No
2016–2017	TraPac Shaft Site Construction	39	16	2	2
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,180	38	29	10
	CEQA/NEPA Increment	39	16	2	2
	CEQA/NEPA Significant?	No	No	No	No
2015–2016	LAXT Shaft Site Construction	40	17	2	2
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,982	66	191	120
	CEQA/NEPA Increment	40	17	2	2
	CEQA/NEPA Significant?	No	No	No	No
2015–2016	Southwest Marine Shaft Site Construction	40	17	2	2
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	585	32	13	5
	CEQA/NEPA Increment	40	17	2	2
	CEQA/NEPA Significant?	No	No	No	No
2016–2018[b]	Onshore Tunneling Emissions at the TraPac Shaft Site	86	17	2	1
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,180	38	29	10
	CEQA/NEPA Increment	86	17	2	1
	CEQA/NEPA Significant?	No	No	No	No
2016–2018[b]	Offshore Tunneling Emissions at the LAXT Shaft Site	171	33	4	3
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,982	66	191	120
	CEQA/NEPA Increment	171	33	4	3
	CEQA/NEPA Significant?	No	No	No	No
2016–2018[b]	Offshore Tunneling Emissions at the Southwest Marine Shaft Site	806	17	2	1
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	585	32	13	5
	CEQA/NEPA Increment	86	17	2	1
	CEQA/NEPA Significant?	No	No	No	No

CEQA and NEPA baselines are zero for new construction at each construction location.
[a] Distances to receptors and site acreages are presented in Table 5-21. NO_X LST was scaled to reflect the federal NO_2 standard.
[b] The time period for tunnel construction includes both the onshore and offshore segments. Tunneling at each shaft site would not occur until after construction of the shaft, which is required to facilitate tunnel construction.

NEPA Impact Determination

As presented in Table 5-34, construction of the onshore and offshore tunnel, and at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) would result in emissions in excess of SCAQMD's LST for NO_X. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in no impacts.

Mitigation

Implement MM AQ-3a through MM AQ-3e and MM AQ-3g (same as MM AQ-2a through MM AQ-2e and MM AQ-2g).

Residual Impacts

Residual impacts would be less than significant as shown in Table 5-35.

Impact AQ-4. Would Alternative 1 (Project) emissions create an objectionable odor at the nearest offsite receptor?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore and Offshore); Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine; Riser/Diffuser Area – San Pedro Shelf and Existing Ocean Outfalls

Construction

CEQA Analysis

Diesel exhaust from off-road construction equipment, the tunnel locomotive, and on-road heavy-duty haul trucks would be the main sources of odors during construction activities at the shaft sites and tunneling activities. Odors from these sources would be localized and generally confined to the shaft site vicinity. The odors would be typical of most construction sites and would be temporary in nature. Additionally, because there are no human receptors near the ocean outfalls, there would be no impacts associated with construction of the riser and diffuser or rehabilitation of the existing ocean outfalls. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Under operating conditions, the tunnel would convey treated effluent from the JWPCP to the Pacific Ocean in a closed, self-contained system. The access covers at the shaft sites would typically be closed and sealed. Additionally, because there are no human receptors near the ocean outfalls, there would be no impacts associated with operation of the proposed riser and diffuser or existing ocean outfalls. Therefore, no odors would occur under operating conditions. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the project.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not create objectionable odors at the nearest offsite receptor. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 1 (Project) would not create an objectionable odor at the nearest offsite receptor. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-6. Would Alternative 1 (Project) expose the public to significant levels of toxic air contaminants?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore and Offshore); Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine; Riser/Diffuser Area – San Pedro Shelf and Existing Ocean Outfalls

Construction

CEQA Analysis

The greatest potential for construction-related TAC emissions would be from diesel particulate emissions associated with heavy equipment operations during site grading activities. Diesel-fueled equipment would be compliant with applicable emission standards, several of which are intended to lower DPM emissions. Construction activities are short-term in nature and, as such, the cancer risk exposure from diesel-related construction equipment is also short-term. The construction activities associated with Alternative 1 (Project) would take approximately 8 years, but would occur in various locations throughout the SCAB, so they would not overlap or impact a common receptor. Construction activities in any single location would be transitory and short-term. The assessment of cancer risk is typically based on a 70-year exposure period. Because exposure to diesel exhaust would be well below the 70-year exposure period at any given location, construction of Alternative 1 (Project) is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis
Alternative 1 (Project) activities would not result in operational emissions, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Construction of Alternative 1 (Project) would not expose the public to significant levels of TACs. Impacts under CEQA would be less than significant. Operation of Alternative 1 (Project) would result in no impacts.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant. Although impacts would be less than significant and no mitigation is required, implementation of MM AQ-2a through MM AQ-2g under Impact AQ-2 would further reduce exposure to TACs.

NEPA Impact Determination
Construction of Alternative 1 (Project) would not expose the public to significant levels of TACs. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in no impacts.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant as discussed under the CEQA impact determination.

5.4.3.4 Impact Summary – Alternative 1

Impacts on air quality analyzed in this EIR/EIS for Alternative 1 are summarized in Table 5-36, Alternative 1; Table 5-37, Alternative 1 (Program); and Table 5-38, Alternative 1 (Project). The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 5-36. Impact Summary – Alternative 1

Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact AQ-1. Would Alternative 1 conflict with or obstruct implementation of the applicable air quality management plan?		
CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
NEPA Less Than Significant Impact During Construction	No mitigation is required.	NEPA Less Than Significant Impact During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA No Impact During Operation	No mitigation is required.	NEPA No Impact During Operation
Impact AQ-2. Would Alternative 1 emissions exceed SCAQMD daily significance thresholds for construction- and/or operation-related emissions?		
CEQA Significant Impact During Construction	**Program** MM AQ-2a. All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM AQ-2b. All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM AQ-2c. Fully cover trucks hauling loose material, such as debris or fill, while operating off site. MM AQ-2d. Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction, provided that it will be available prior to commencing construction and proven reliable. MM AQ-2e. Route construction trucks away from congested streets or sensitive receptor areas as feasible. **Project** MM AQ-2a through MM AQ-2e MM AQ-2f**.** Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles. MM AQ-2g. Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.	CEQA Significant and Unavoidable Impact During Construction

Table 5-36 (Continued)

Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
NEPA Significant Impact During Construction	MM AQ-2a through MM AQ-2g	NEPA Significant and Unavoidable Impact During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA No Impact During Operation	No mitigation is required.	NEPA No Impact During Operation

Table 5-37. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact AQ-3. Would Alternative 1 (Program) result in emissions in excess of SCAQMD's Localized Significance Thresholds?			
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA N/A During Operation	N/A	CEQA N/A During Operation
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA N/A During Operation	N/A	CEQA N/A During Operation
Biosolids Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 5-37 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact AQ-4. Would Alternative 1 (Program) emissions create objectionable odors at the nearest offsite receptor?			
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Biosolids Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact AQ-6. Would Alternative 1 (Program) expose the public to significant levels of toxic air contaminants?			
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 5-37 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Biosolids Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 5-38. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AQ-3. Would Alternative 1 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Significant Impact During Construction	N/A	MM AQ-3a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM AQ-3b (same as MM AQ-2b). All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM AQ-3c (same as MM AQ-2c). Fully cover trucks hauling loose material, such as debris or fill, while operating off site. MM AQ-3d (same as MM AQ-2d). Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction, provided that it will be available prior to commencing construction and proven reliable. MM AQ-3e (same as MM AQ-2e). Route construction trucks away from congested streets or sensitive receptor areas as feasible. MM AQ-3g (same as MM AQ-2g). Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 5-38 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Wilmington to SP Shelf (Offshore)	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction

Table 5-38 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 5-38 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AQ-4. Would Alternative 1 (Project) emissions create objectionable odors at the nearest offsite receptor?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 5-38 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 5-38 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact AQ-6. Would Alternative 1 (Project) expose the public to significant levels of toxic air contaminants?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 5-38 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 5-38 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

5.4.4 Alternative 2

Alternative 2 (Program) is the same as Alternative 1 (Program). The impacts for the onshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project). For Alternative 2 (Project), however, the riser and diffuser area would be on the PV Shelf rather than the SP Shelf.

5.4.4.1 Program and Project

Impact AQ-1 and Impact AQ-2 are evaluated on a regional level and thus analyzed for the combined emissions of construction/operation activities that would occur concurrently for the program and project.

Impact AQ-1. Would Alternative 2 conflict with or obstruct implementation of the applicable air quality management plan?

Construction

CEQA Analysis

The purpose of the 2007 AQMP is to set forth a comprehensive program to bring the SCAB into compliance with all federal and state air quality planning requirements. Therefore, it is appropriate to address compliance on a regional level by evaluating the concurrent impacts associated with the program and the project. Alternative 2 (Program) is the same as Alternative 1 (Program). Construction of program elements would produce emissions of nonattainment pollutants, primarily in the form of diesel exhaust and fugitive dust. Compliance with the requirements of the AQMP and SCAQMD rules and regulations would ensure that construction of Alternative 2 (Program) would not conflict with or obstruct implementation of the AQMP. Construction of Alternative 2 (Project) would produce emissions of nonattainment pollutants, primarily in the form of diesel exhaust and fugitive dust. Similar to Alternative 1 (Project), Alternative 2 (Project) would comply with attainment strategies outlined in the

2007 AQMP and enforced at the state and federal level. Alternative 2 would, therefore, not conflict with or obstruct implementation of the AQMP. Impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. Therefore, under NEPA, the impacts associated with construction of the combined program and project for Alternative 2 would be the same as for Alternative 2 (Project), and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Alternative 2 (Program), which is the same as Alternative 1 (Program), uses SCAG's population forecasts for the JOS service area through the year 2050, which are included in the 2007 AQMP. Operation of Alternative 2 (Project), which consists of using a new ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. Alternative 2 would, therefore, not conflict with or obstruct implementation of the AQMP. Impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from operation of program elements. Therefore, under NEPA, the impacts associated with operation of the combined program and project for Alternative 2 would be the same as for Alternative 2 (Project). Operational project emissions would be zero because the tunnel and outfall system would emit no pollutants. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 2 would not conflict with or obstruct implementation of the AQMP. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 2 would not conflict with or obstruct implementation of the AQMP. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation would result in no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-2. Would Alternative 2 exceed the SCAQMD daily significance thresholds for construction- and/or operation-related emissions?

See Impact AQ-2 under Alternative 1 for a discussion of emissions-based thresholds used to assess the potential significance of criteria air pollutants at the regional level for peak day emissions for the combined program and project.

Construction

CEQA Analysis

Alternative 2 (Program) is the same as Alternative 1 (Program). Construction of Alternative 2 (Project) is anticipated to occur over a 78-month active construction period, starting in the first quarter of 2015 and concluding in the second quarter of 2021. For this analysis, emissions resulting from construction-related activities reflect conservative assumptions based on a construction scenario wherein construction would occur in a relatively intensive manner. Because of this conservative assumption, actual emissions would likely be less than those presented here. If construction were delayed or were to occur over a longer period of time, emissions could be reduced because of (1) a more modern and cleaner burning construction equipment fleet mix, and/or (2) a less-intensive build-out schedule (i.e., fewer daily emissions occurring over a longer time interval). The construction equipment mix and duration for each construction stage is detailed in the construction spreadsheets provided in Appendix 5-B.

Peak day criteria pollutant emissions associated with Alternative 2 construction activities are presented in Table 5-39. Peak day emissions for each construction phase were determined by summing emissions from those construction activities that overlap in the proposed construction schedule. In the case where more than one possible combination of activities would occur during the same phase, emissions were calculated for all possible combinations, and the combination producing the greatest emissions was reported.

Table 5-39. Alternative 2 Under CEQA Peak Day Construction Emissions Without Mitigation

Time Period	Element	Peak Day Emissions (pounds per day)					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Program							
2018–2050	JWPCP Solids Processing	5	29	42	0	21	6
2018–2028	SJCWRP Process Optimization	5	29	42	0	9	3
2018–2028	POWRP Process Optimization	4	20	29	0	3	2
2018–2028	LCWRP Process Optimization	5	28	40	0	6	2
2018–2028	LBWRP Process Optimization	5	28	40	0	6	2
2035–2040	SJCWRP Plant Expansion	4	21	30	0	12	3
2018–2028	Peak Day Emissions[a]	25	133	192	0	45	15
Project							
2015–2015	JWPCP East Shaft Construction	25	94	244	0	12	10
2016–2018	Onshore Tunnel Alignment	32	183	371	1	18	15
2016–2017	TraPac Shaft Construction	23	88	217	0	11	9
2015–2016	LAXT Shaft Construction	25	94	244	0	12	10
2016–2021	Offshore Tunnel Alignment	37	206	432	1	22	18
2015–2016	Southwest Marine Shaft Construction	25	94	244	0	12	10
2018–2020	PV Shelf Riser Construction	3	53	51	0	2	2
2020–2021	PV Shelf Diffuser Construction	17	87	160	0	5	4

Table 5-39 (Continued)

Time Period	Element	Peak Day Emissions (pounds per day)					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
2020–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2016–2017	Peak Day Emissions[b]	92	477	1,020	2	51	42
Concurrent Peak Day Emissions[c]		97	575	1,045	2	87	50
Significance Thresholds		75	550	100	150	150	55
CEQA Increment[d]		97	575	1,045	2	87	50
CEQA Significant?		Yes	Yes	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day program construction emissions would occur during 2018 through 2028 if JWPCP solids processing and process optimization at the WRPs were constructed concurrently.

[b] Peak day project construction emissions would occur in 2016 and 2017 when construction of the TraPac shaft overlaps with both tunneling activities.

[c] Concurrent peak day emissions of VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ would occur in 2018 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, the onshore and offshore tunnels, and the riser on the PV Shelf occurred concurrently. Concurrent peak day SO_X emissions would occur in 2016 and 2017 if construction of the onshore and offshore tunnels and the TraPac shaft occurred concurrently.

[d] CEQA increment is equivalent to concurrent peak day emissions because the CEQA baseline is zero for new construction.

Due to a lengthy construction period, Alternative 2 (Project) construction could overlap with Alternative 2 (Program) construction, specifically during process optimization of the WRPs. Concurrent peak day program and project emissions were estimated in each year during which construction from Alternative 2 (Project) and Alternative 2 (Program) could potentially overlap. The combination of peak day program and project emissions that would result in the greatest concurrent emissions is shown in Table 5-39. The concurrent peak day emissions from Alternative 2 construction, as reported in Table 5-39, would occur during different years for different pollutants. Concurrent peak day emissions of VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ would occur in 2018 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, the onshore and offshore tunnels, and the riser on the PV Shelf occurred concurrently. Concurrent peak day SO_X emissions would occur in 2016 and 2017 if construction of the onshore and offshore tunnels and the TraPac shaft occurred concurrently. Impacts would be significant for VOC, CO, and NO_X emissions.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. Therefore, under NEPA, the impacts associated with construction of the combined program and project for Alternative 1 would be the same as for Alternative 1 (Project), and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. Impacts under NEPA are presented in Table 5-40. Impacts would be significant for VOC and NO_X emissions.

Table 5-40. Alternative 2 Under NEPA Peak Day Construction Emissions Without Mitigation

Time Period	Project Element	Peak Day Emissions (pounds per day)					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
2015–2015	JWPCP East Shaft Construction	25	94	244	0	12	10
2016–2018	Onshore Tunnel Alignment	32	183	371	1	18	15
2016–2017	TraPac Shaft Construction	23	88	217	0	11	9
2015–2016	LAXT Shaft Construction	25	94	244	0	12	10

Table 5-40 (Continued)

Time Period	Project Element	Peak Day Emissions (pounds per day)					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
2016–2021	Offshore Tunnel Alignment	37	206	432	1	22	18
2015–2016	Southwest Marine Shaft Construction	25	94	244	0	12	10
2018–2020	PV Shelf Riser Construction	3	53	51	0	2	2
2020–2021	PV Shelf Diffuser Construction	17	87	160	0	5	4
2020–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2016–2017	Peak Day Emissions[a]	92	477	1020	2	51	42
Significance Thresholds		75	550	100	150	150	55
NEPA Increment		92	477	1020	2	51	42
NEPA Significant?[b]		Yes	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day construction emissions would occur in 2016 and 2017 when TraPac shaft site construction overlaps with both tunneling activities.

[b] The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. NEPA significance need not be determined for program and project concurrently because federal activities would occur under project only.

Operation

CEQA Analysis

Operational emissions would result from program elements only; there would be no operational activities resulting in criteria pollutant emissions or impacts from project elements. Operational emissions associated with Alternative 2 (Program) would be the same as Alternative 1 (Program). As shown in Table 5-27, impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. Operation of Alternative 2 (Project), which consists of using a new ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. There would be no impacts under NEPA.

CEQA Impact Determination

Construction of Alternative 2 would exceed SCAQMD's significance thresholds for construction-related emissions for VOC, CO, and NO_X, as presented in Table 5-39. Impacts under CEQA would be significant before mitigation. As presented in Table 5-27, operation of Alternative 2 would result in less than significant impacts.

Mitigation

Program

Implement MM AQ-2a through MM AQ-2e.

Project

Implement MM AQ-2a through MM AQ-2g.

Residual Impacts

Implementation of MM AQ-2a through MM AQ-2g would reduce construction-related emissions for program and project elements. Peak day criteria pollutant emissions associated with mitigated project

construction are presented in Table 5-41 for Alternative 2. Due to a lengthy construction period, Alternative 2 (Project) construction could overlap with Alternative 2 (Program) construction, specifically during process optimization of the WRPs. Concurrent peak day program and project emissions were estimated in each year during which construction from Alternative 2 (Project) and Alternative 2 (Program) could potentially overlap. The combination of peak day program and project emissions that would result in the greatest concurrent emissions is reported in Table 5-41.

Table 5-41. Alternative 2 Under CEQA Peak Day Construction Emissions With Mitigation

		Peak Day Emissions (pounds per day)					
Time Period	**Element**	**VOC**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Program							
2018–2050	JWPCP Solids Processing	2	29	16	0	21	5
2018–2028	SJCWRP Process Optimization	2	29	16	0	8	2
2018–2028	POWRP Process Optimization	1	20	13	0	3	1
2018–2028	LCWRP Process Optimization	2	28	15	0	5	2
2018–2028	LBWRP Process Optimization	1	28	14	0	5	2
2035–2040	SJCWRP Plant Expansion	1	21	10	0	12	3
2018–2028	Peak Day Emissions[a]	8	133	73	0	41	12
Project							
2015–2015	JWPCP East Shaft Construction	8	68	81	0	5	4
2016–2018	Onshore Tunnel Alignment	16	147	125	1	8	5
2016–2017	TraPac Shaft Construction	8	67	78	0	5	4
2015–2016	LAXT Shaft Construction	8	68	81	0	5	4
2016–2021	Offshore Tunnel Alignment	18	161	155	1	9	6
2015–2016	Southwest Marine Shaft Construction	8	68	81	0	5	4
2018–2020	PV Shelf Riser Construction	3	51	45	0	1	1
2020–2021	PV Shelf Diffuser Construction	5	86	50	0	3	3
2020–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2016–2017	Peak Day Emissions[b]	41	375	358	2	22	15
Concurrent Peak Day Emissions[c]		44	492	398	2	60	24
Significance Thresholds		75	550	100	150	150	55
CEQA Increment[d]		44	492	398	2	60	24
CEQA Significant?		No	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day program construction emissions would occur during 2018 through 2028 if JWPCP solids processing and process optimization at the WRPs were constructed at the same time.

[b] Peak day project construction emissions would occur in 2016 and 2017 when construction of the TraPac shaft overlaps with both tunneling activities.

[c] Concurrent peak day emissions of VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ would occur in 2018 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, the onshore and offshore tunnels, and the riser and diffuser on the PV Shelf occurred concurrently. Concurrent peak day SO_X emissions would occur in 2016 and 2017 if onshore and offshore tunneling and TraPac shaft site construction activities occurred concurrently.

[d] CEQA increment is equivalent to maximum concurrent peak day emissions because the CEQA baseline is zero for new construction.

The peak day emissions from concurrent project and program construction would occur in different years for different pollutants. Concurrent peak day emissions of VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ would occur in 2018 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, the onshore and offshore tunnels, and the riser and diffuser on the PV Shelf occurred concurrently.

Concurrent peak day SO_X emissions would occur in 2016 and 2017 if onshore and offshore tunneling and TraPac shaft site construction activities occurred concurrently.

The CEQA residual impact determination for construction impacts is made on a regional level for Alternative 2 in Table 5-41. Although implementation of the mitigation measures would reduce emissions, NO_X would still exceed the SCAQMD significance threshold following mitigation for Alternative 2 under CEQA. Therefore, residual impacts would be significant and unavoidable on a regional level during construction. Impacts would be less than significant during operation.

NEPA Impact Determination

Construction of Alternative 2 would exceed the SCAQMD significance threshold for construction-related emissions for VOC and NO_X, as presented in Table 5-40. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 2 would result in no impacts.

Mitigation

Program

Implement MM AQ-2a through MM AQ-2e.

Project

Implement MM AQ-2a through MM AQ-2g.

Residual Impacts

Peak day criteria pollutant emissions associated with mitigated construction are presented in Table 5-42 for Alternative 2.

Table 5-42. Alternative 2 Under NEPA Peak Day Construction Emissions With Mitigation

		Peak Day Emissions (pounds per day)					
Time Period	**Project Element**	**VOC**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2015–2015	JWPCP East Shaft Construction	8	68	81	0	5	4
2016–2018	Onshore Tunnel Alignment	16	147	125	1	8	5
2016–2017	TraPac Shaft Construction	8	67	78	0	5	4
2015–2016	LAXT Shaft Construction	8	68	81	0	5	4
2016–2021	Offshore Tunnel Alignment	18	161	155	1	9	6
2015–2016	Southwest Marine Shaft Construction	8	68	81	0	5	4
2018–2020	PV Shelf Riser Construction	3	51	45	0	1	1
2020–2021	PV Shelf Diffuser Construction	5	86	50	0	3	3
2020–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2016–2017	Peak Day Emissions[a]	41	375	358	2	22	15
Significance Thresholds		75	550	100	150	150	55
NEPA Increment		41	375	358	2	22	15
NEPA Significant?[b]		No	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
[a] Peak day emissions would occur when TraPac shaft site construction overlaps with both tunneling activities.
[b] NEPA baseline is equivalent to all activities that would occur absent federal action. As such, the NEPA baseline is equivalent to the emissions from construction the program elements.

As shown in Table 5-42, although implementation of MM AQ-2a through MM AQ-2g would reduce construction-related emissions, NO_X emissions would still exceed the SCAQMD significance threshold

following mitigation for Alternative 2 under NEPA. Therefore, residual impacts would be significant and unavoidable during construction. Operation of Alternative 2 would result in no impacts.

5.4.4.2 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

5.4.4.3 Project

Impacts AQ-3, AQ-4, and AQ-6 are evaluated on a localized level and thus analyzed separately for project and program.

Impact AQ-3. Would Alternative 2 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore); Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

The impacts for the onshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project) (see Table 5-34). Impacts would be significant for NO_X at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites during site construction.

Under this Alternative, as under Alternative 1, after completion of the LAXT shaft, two TBMs would tunnel concurrently, moving north and south from the LAXT shaft site. All tunneling emissions from the northbound and southbound tunnels would be emitted at the LAXT shaft site until the northbound TBM passes the TraPac site and the southbound TBM passes the Southwest Marine site. Once the northbound TBM passes the TraPac shaft site, emissions from the northbound tunnel would be emitted at the TraPac site. Once the southbound TBM passes the Southwest Marine shaft site, emissions from the southbound tunnel would be emitted at the Southwest Marine site. Accordingly, as with Alternative 1, all offshore tunnel emissions would be localized at the LAXT and TraPac shaft sites, and would result in significant impacts before mitigation as shown in Table 5-34.

Alternative 2 (Project) involves a riser and diffuser area on the PV Shelf rather than the SP Shelf. Alternative 2 (Project) riser and diffuser elements are located several miles out to sea near the shelf break along the PV Shelf. The existing ocean outfalls are also located near the shelf break along the PV Shelf. Because there are no receptors within the LST methodology limit of 1,640 feet (500 meters) of these construction areas, per SCAQMD LST methodology, there is no potential for localized construction emissions to affect sensitive receptors in these in-water areas.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Operation of Alternative 2 (Project), which consists of using a new ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. There would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure.

CEQA Impact Determination

As presented in Table 5-34, construction of the onshore and offshore tunnel, and at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) would result in emissions in excess of SCAQMD's LST for NO_X. Impacts under CEQA would be significant before mitigation. Operation of Alternative 2 (Project) would result in no impacts.

Mitigation

Implement MM AQ-3a through MM AQ-3e and MM AQ-3g (same as MM AQ-2a through MM AQ-2e and MM AQ-2g).

Residual Impacts

Similar to the residual impacts under Alternative 1 (Project), implementation of MM AQ-3a through MM AQ-3e and MM AQ-3g would reduce construction impacts related to Alternative 2 (Project) to below SCAQMD LSTs for all pollutants, as shown in Table 5-35. Residual impacts would be less than significant.

NEPA Impact Determination

As presented in Table 5-34, construction of the onshore and offshore tunnel, and at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) would result in emissions in excess of SCAQMD's LST for NO_X. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 2 (Project) would result in no impacts.

Mitigation

Implement MM AQ-3a through MM AQ-3e and MM AQ-3g (same as MM AQ-2a through MM AQ-2e and MM AQ-2g).

Residual Impacts

Residual impacts would be less than significant as described under the CEQA impact determination.

Impact AQ-4. Would Alternative 2 (Project) emissions create an objectionable odor at the nearest offsite receptor?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore); Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
As discussed under Alternative 1 (Project), impacts associated with objectionable odors during construction of the tunnel, shaft sites, riser and diffuser, and rehabilitation of the existing ocean outfalls would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis
Similar to Alternative 1 (Project), operation of Alternative 2 (Project) would not create objectionable odors. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the project.

CEQA Impact Determination
Construction and operation of Alternative 2 (Project) would not create objectionable odors at the nearest offsite receptor. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction and operation of Alternative 2 (Project) would not create objectionable odors at the nearest offsite receptor. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact AQ-6. Would Alternative 2 (Project) expose the public to significant levels of toxic air contaminants?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore); Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

The greatest potential for construction-related TAC emissions would be from diesel particulate emissions associated with heavy equipment operations during site grading activities. Construction activities are short-term in nature and, as such, the cancer risk exposure from diesel-related construction equipment is also short-term. The construction activities associated with Alternative 2 (Project) would take nearly 7 years, but would occur in various locations throughout the SCAB, so they would not overlap or impact a common receptor. Construction activities in any single location would be transitory and short-term. The assessment of cancer risk is typically based on a 70-year exposure period. Because exposure to diesel exhaust would be well below the 70-year exposure period at any given location, construction of Alternative 2 (Project) is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Alternative 2 (Project) activities would not result in increased operational emissions, nor would emission sources be relocated closer to sensitive receptors. There would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction of Alternative 2 (Project) would not expose the public to significant levels of TACs. Impacts under CEQA would be less than significant. Operation of Alternative 2 (Project) would result in no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant. Although impacts would be less than significant and no mitigation is required, implementation of MM AQ-2a through MM AQ-2g under Impact AQ-2 would further reduce exposure to TACs.

NEPA Impact Determination

Construction of Alternative 2 (Project) would not expose the public to significant levels of TACs. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 2 (Project) would result in no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant as discussed under the CEQA impact determination.

5.4.4.4 Impact Summary – Alternative 2

Impacts on air quality analyzed in this EIR/EIS for Alternative 2 are summarized in Table 5-43. Impacts on air quality for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 5-37. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 5-44. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 5-43. Impact Summary – Alternative 2

Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact AQ-1. Would Alternative 2 conflict with or obstruct implementation of the applicable air quality management plan?		
CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
NEPA Less Than Significant Impact During Construction	No mitigation is required.	NEPA Less Than Significant Impact During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA No Impact During Operation	No mitigation is required.	NEPA No Impact During Operation
Impact AQ-2. Would Alternative 2 emissions exceed SCAQMD daily significance thresholds for construction- and/or operation-related emissions?		
CEQA Significant Impact During Construction	**Program** MM AQ-2a. All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM AQ-2b. All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM AQ-2c. Fully cover trucks hauling loose material, such as debris or fill, while operating off site.	CEQA Significant and Unavoidable Impact During Construction

Table 5-43 (Continued)

Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
	MM AQ-2d. Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction, provided that it will be available prior to commencing construction and proven reliable. MM AQ-2e. Route construction trucks away from congested streets or sensitive receptor areas as feasible. **Project** MM AQ-2a through MM AQ-2e MM AQ-2f**.** Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles. MM AQ-2g. Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.	
NEPA Significant Impact During Construction	MM AQ-2a through MM AQ-2g.	NEPA Significant and Unavoidable Impact During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA No Impact During Operation	No mitigation is required.	NEPA No Impact During Operation

Table 5-44. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AQ-3. Would Alternative 2 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Significant Impact During Construction	N/A	MM AQ-3a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM AQ-3b (same as MM AQ-2b). All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap.	CEQA Less Than Significant Impact During Construction

Table 5-44 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			MM AQ-3c (same as MM AQ-2c). Fully cover trucks hauling loose material, such as debris or fill, while operating off site. MM AQ-3d (same as MM AQ-2d). Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction, provided that it will be available prior to commencing construction and proven reliable. MM AQ-3e (same as MM AQ-2e). Route construction trucks away from congested streets or sensitive receptor areas as feasible. MM AQ-3g (same as MM AQ-2g). Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.	
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction

Table 5-44 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 5-44 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact AQ-4. Would Alternative 2 (Project) emissions create objectionable odors at the nearest offsite receptor?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 5-44 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 5-44 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact AQ-6. Would Alternative 2 (Project) expose the public to significant levels of toxic air contaminants?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 5-44 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 5-44 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

5.4.5 Alternative 3

Alternative 3 (Program) is the same as Alternative 1 (Program). The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as those described for Alternative 2 (Project). The impacts for the existing ocean outfalls for Alternative 3 (Project) would be the same as for Alternative 1 (Project).

5.4.5.1 Program and Project

Impact AQ-1 and Impact AQ-2 are evaluated on a regional level and thus analyzed for the combined emissions of construction/operation activities that would occur concurrently for the program and project.

Impact AQ-1. Would Alternative 3 conflict with or obstruct implementation of the applicable air quality management plan?

Construction

CEQA Analysis

The purpose of the 2007 AQMP is to set forth a comprehensive program to bring the SCAB into compliance with all federal and state air quality planning requirements. Therefore, it is appropriate to address compliance on a regional level by evaluating the concurrent impacts associated with the program and the project. Alternative 3 (Program) is the same as Alternative 1 (Program). Construction of program elements would produce emissions of nonattainment pollutants, primarily in the form of diesel exhaust and fugitive dust. Compliance with the requirements of the AQMP and SCAQMD rules and regulations would ensure that construction of Alternative 3 (Program) would not conflict with or obstruct implementation of the AQMP. Construction of Alternative 3 (Project) would produce emissions of nonattainment pollutants, primarily in the form of diesel exhaust and fugitive dust. Similar to Alternative 1 (Project), Alternative 3 (Project) would comply with attainment strategies outlined in the 2007 AQMP and enforced at the state and federal level. Alternative 3 would, therefore, not conflict with or obstruct implementation of the AQMP. Impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. Therefore, under NEPA, the impacts associated with construction of the combined program and project for Alternative 3 would be the same as for Alternative 3 (Project), and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Alternative 3 (Program), which is the same as Alternative 1 (Program), uses SCAG's population forecasts for the JOS service area through the year 2050, which are included in the 2007 AQMP. Operation of Alternative 3 (Project), which consists of using a new ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. Alternative 3 would, therefore, not conflict with or obstruct implementation of the AQMP. Impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from operation of program elements. Therefore, under NEPA, the impacts associated with operation of the combined program and project for Alternative 3 would be the same as for Alternative 3 (Project). Operational project emissions would be zero because the tunnel and outfall system would emit no pollutants. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 3 would not conflict with or obstruct implementation of the AQMP. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 would not conflict with or obstruct implementation of the AQMP. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation would result in no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-2. Would Alternative 3 exceed the SCAQMD daily significance thresholds for construction- and/or operation-related emissions?

See Impact AQ-2 under Alternative 1 for a discussion of emissions-based thresholds used to assess the potential significance of criteria air pollutants at the regional level for peak day emissions for the combined program and project.

Construction

CEQA Analysis

Alternative 3 (Program) is the same as Alternative 1 (Program). Construction of Alternative 3 (Project) is anticipated to occur over a 78-month active construction period, starting in the first quarter of 2015 and concluding in the second quarter of 2021. For this analysis, emissions resulting from construction-related activities reflect conservative assumptions based on a construction scenario wherein construction would occur in a relatively intensive manner. Because of this conservative assumption, actual emissions could be less than those presented here. If construction were delayed or were to occur over a longer period of time, emissions could be reduced because of (1) a more modern and cleaner burning construction equipment fleet mix, and/or (2) a less-intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval). The construction equipment mix and duration for each construction stage is detailed in the construction spreadsheets provided in Appendix 5-B.

Peak day criteria pollutant emissions associated with Alternative 3 construction activities are presented in Table 5-45. Peak day emissions for each construction phase were determined by summing emissions from those construction activities that overlap in the proposed construction schedule. In the case where more than one possible combination of activities would occur during the same phase, emissions were calculated for all possible combinations, and the combination producing the greatest emissions was reported.

Table 5-45. Alternative 3 Under CEQA Peak Day Construction Emissions Without Mitigation

Time Period	Element	Peak Day Emissions (pounds per day)					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Program							
2018–2050	JWPCP Solids Processing	5	29	42	0	21	6
2018–2028	SJCWRP Process Optimization	5	29	42	0	9	3
2018–2028	POWRP Process Optimization	4	20	29	0	3	2
2018–2028	LCWRP Process Optimization	5	28	40	0	6	2
2018–2028	LBWRP Process Optimization	5	28	40	0	6	2
2035–2040	SJCWRP Plant Expansion	4	21	30	0	12	3
2018–2028	Peak Day Emissions[a]	25	133	192	0	45	15
Project							
2015–2015	JWPCP West Shaft Construction	25	94	244	0	11	10
2016–2021	Onshore/Offshore Tunnel Alignment	32	183	371	1	18	15
2019–2019	Angels Gate Shaft Construction	18	75	158	0	8	6
2018–2020	PV Shelf Riser Construction	3	53	51	0	2	2
2020–2021	PV Shelf Diffuser Construction	17	87	160	0	5	4
2020–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2019–2019	Peak Day Emissions[b]	53	310	579	1	28	23
Concurrent Peak Day Emissions[c]		78	444	771	1	73	38
Significance Thresholds		75	550	100	150	150	55
CEQA Increment[d]		78	444	771	1	73	38
CEQA Significant?		Yes	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day program construction emissions would occur during 2018 through 2028 if JWPCP solids processing and process optimization at the WRPs were constructed at the same time.

[b] Peak day project construction emissions would occur in 2019 when construction of the Angels Gate shaft and riser on the PV Shelf overlaps with onshore tunneling activities.

[c] Concurrent peak day emissions would occur during 2019 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, the Angels Gate shaft, the riser on the PV Shelf, and the onshore tunnel occurred concurrently.

[d] CEQA increment is equivalent to concurrent peak day emissions because the CEQA baseline is zero for new construction.

Due to a lengthy construction period, Alternative 3 (Project) construction could overlap with Alternative 3 (Program) construction, specifically during process optimization of the WRPs. Peak day program and project emissions were estimated in each year during which construction from Alternative 3 (Project) and Alternative 3 (Program) could potentially overlap. The combination of peak day program and project emissions that would result in the greatest concurrent emissions is shown in Table 5-45. The peak day emissions from concurrent project and program construction would occur during 2019 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, the Angels Gate shaft, the riser on the PV Shelf, and the onshore tunnel occurred concurrently. Impacts would be significant for VOC and NO_X emissions.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. Therefore, under NEPA, the impacts associated with construction of the combined program and project for Alternative 3 would be the same as for Alternative 3 (Project), and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. Impacts under NEPA are presented in Table 5-46. Impacts would be significant for NO_X emissions.

Table 5-46. Alternative 3 Under NEPA Peak Day Construction Emissions Without Mitigation

		Peak Day Emissions (pounds per day)					
Time Period	**Project Element**	**VOC**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2015–2015	JWPCP West Shaft Construction	25	94	244	0	11	10
2016–2021	Onshore/Offshore Tunnel Alignment	32	183	371	1	18	15
2019–2019	Angels Gate Shaft Construction	18	75	158	0	8	6
2018–2020	PV Shelf Riser Construction	3	53	51	0	2	2
2020–2021	PV Shelf Diffuser Construction	17	87	160	0	5	4
2020–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2019–2019	Peak Day Emissions[a]	53	310	579	1	28	23
Significance Thresholds		75	550	100	150	150	55
NEPA Increment		53	310	579	1	28	23
NEPA Significant?[b]		No	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day emissions would occur in 2019 when construction of the Angels Gate shaft and riser on the PV Shelf overlaps with onshore tunneling activities.

[b] The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. NEPA significance need not be determined for program and project concurrently because federal activities would occur under project only.

Operation

CEQA Analysis

Operational emissions would result from program elements only; there would be no operational activities resulting in criteria pollutant emissions or impacts from project elements. Operational emissions associated with Alternative 3 (Program) would be the same as Alternative 1 (Program). As shown in Table 5-27, impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. Operation of Alternative 3 (Project), which consists of using a new ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. There would be no impacts under NEPA.

CEQA Impact Determination

Construction of Alternative 3 would exceed SCAQMD's significance thresholds for construction-related emissions for VOC and NO_X, as presented in Table 5-45. Impacts under CEQA would be significant before mitigation. As presented in Table 5-27, operation of Alternative 3 would result in less than significant impacts.

Mitigation

Program

Implement MM AQ-2a through MM AQ-2e.

Project

Implement MM AQ-2a through MM AQ-2g.

Residual Impacts

Implementation of MM AQ-2a through MM AQ-2g would reduce construction-related emissions for program and project elements. Peak day criteria pollutant emissions associated with mitigated project construction are presented in Table 5-47 for Alternative 3. Due to a lengthy construction period, project construction could overlap with program construction. Peak day program and project emissions were estimated in each year during which construction from program and project elements could potentially overlap. The combination of peak day program and project emissions that would result in the greatest concurrent emissions is reported in Table 5-47.

Table 5-47. Alternative 3 Under CEQA Peak Daily Construction Emissions With Mitigation

		Peak Day Emissions (pounds per day)					
Time Period	**Element**	**VOC**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Program							
2018–2050	JWPCP Solids Processing	2	29	16	0	21	5
2018–2028	SJCWRP Process Optimization	2	29	16	0	8	2
2018–2028	POWRP Process Optimization	1	20	13	0	3	1
2018–2028	LCWRP Process Optimization	2	28	15	0	5	2
2018–2028	LBWRP Process Optimization	1	28	14	0	5	2
2035–2040	SJCWRP Plant Expansion	1	21	10	0	12	3
2018–2028	Peak Day Emissions[a]	8	133	73	0	41	12
Project							
2015–2015	JWPCP West Shaft Construction	8	68	81	0	5	4
2016–2021	Onshore/Offshore Tunnel Alignment	16	147	125	1	7	5
2019–2019	Angels Gate Shaft Construction	7	64	72	0	4	3
2018–2020	PV Shelf Riser Construction	3	51	45	0	1	1
2020–2021	PV Shelf Diffuser Construction	5	86	50	0	3	3
2020–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2019–2019	Peak Day Emissions[b]	26	263	242	1	13	9
Concurrent Peak Day Emissions[c]		34	396	315	1	54	21
Significance Thresholds		75	550	100	150	150	55
CEQA Increment[d]		34	396	315	1	54	21
CEQA Significant?		No	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day program construction emissions would occur during 2018 through 2028 if JWPCP solids processing and process optimization at the WRPs were constructed at the same time.

[b] Peak day project construction emissions would occur in 2019 when construction of the Angels Gate shaft and riser on the PV Shelf overlaps with onshore tunneling activities.

[c] Concurrent peak day emissions would occur during 2019 if construction of the JWPCP solids processing facilities, process optimization at the WRPs, the Angels Gate shaft, the riser on the PV Shelf, and the onshore tunnel occurred concurrently.

[d] CEQA increment is equivalent to maximum concurrent peak day emissions because the CEQA baseline is zero for new construction.

The peak day emissions from concurrent project and program construction would occur in 2019, for all criteria pollutants, if construction of the JWPCP solids processing facilities, process optimization at the WRPs, the Angels Gate shaft, the riser on the PV Shelf, and the onshore tunnel occurred concurrently.

The CEQA residual impact determination for construction impacts is made on a regional level for Alternative 3 in Table 5-47. Although implementation of the mitigation measures would reduce emissions, NO_X would still exceed the SCAQMD significance threshold following mitigation for

Alternative 3 under CEQA. Therefore, residual impacts would be significant and unavoidable on a regional level during construction. Impacts would be less than significant during operation.

NEPA Impact Determination

Construction of Alternative 3 would exceed the SCAQMD significance threshold for construction-related emissions for NO_X, as presented in Table 5-46. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 3 would result in no impacts.

Mitigation

Program

Implement MM AQ-2a through MM AQ-2e.

Project

Implement MM AQ-2a through MM AQ-2g.

Residual Impacts

Peak day criteria pollutant emissions associated with mitigated construction are presented in Table 5-48 for Alternative 3.

Table 5-48. Alternative 3 Under NEPA Peak Day Construction Emissions With Mitigation

		Peak Day Emissions (pounds per day)					
Time Period	**Project Element**	**VOC**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2015–2015	JWPCP West Shaft Construction	8	68	81	0	5	4
2016–2021	Onshore/Offshore Tunnel Alignment	16	147	125	1	7	5
2019–2019	Angels Gate Shaft Construction	7	64	72	0	4	3
2018–2020	PV Shelf Riser Construction	3	51	45	0	1	1
2020–2021	PV Shelf Diffuser Construction	5	86	50	0	3	3
2020–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2019–2019	Peak Day Emissions[a]	26	263	242	1	13	9
Significance Thresholds		75	550	100	150	150	55
NEPA Increment		26	263	242	1	13	9
NEPA Significant?[b]		No	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day emissions would occur in 2019 when construction of the Angels Gate shaft and riser on the PV Shelf overlap with onshore tunneling activities.

[b] NEPA baseline is equivalent to all activities that would occur absent federal action. As such, the NEPA baseline is equivalent to the emissions from constructing the program elements.

As shown in Table 5-48, although implementation of MM AQ-2a through MM AQ-2g would reduce construction-related emissions, NO_X would still exceed the SCAQMD significance threshold following mitigation for Alternative 3 under NEPA. Therefore, residual impacts would be significant and unavoidable during construction. There would be no impacts during operation.

5.4.5.2 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

5.4.5.3 Project

Impacts AQ-3, AQ-4, and AQ-6 are evaluated on a localized level and thus analyzed separately for project and program.

Impact AQ-3. Would Alternative 3 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore and Offshore); Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as for Alternative 2 (Project). The impacts for the existing ocean outfalls would be the same as for Alternative 1 (Project). Additionally, Alternative 3 (Project) includes the following shaft sites: JWPCP West and Angels Gate. The distance to each shaft site's nearest existing sensitive receptor is summarized in Table 5-21 and shown on Figures 5-11 and 5-15, respectively.

Under this alternative, after completion of the JWPCP West shaft site, a single TBM would tunnel from the JWPCP West shaft site toward the Angels Gate shaft site. All tunneling emissions would be emitted at the JWPCP West shaft site until the TBM passes the Angels Gate site. Once the TBM passes the Angels Gate site, emissions would be emitted at the Angels Gate site. Accordingly, all onshore tunnel emissions would be localized at the JWPCP West shaft site, and all offshore tunnel emissions would be localized at the Angels Gate shaft site.

Onsite construction emissions for the additional elements under Alternative 3 (Project) are presented in Table 5-49. As shown in Table 5-49, impacts would be significant for NO_X at the JWPCP West shaft site during site construction. Impacts would also be significant for NO_X for the onshore tunnel, with emissions localized at the JWPCP West shaft site, and for the offshore tunnel, with emissions localized at the Angels Gate shaft site.

Table 5-49. Alternative 3 (Project) Localized Construction Emissions Without Mitigation

		Peak Day Emissions (pounds per day)			
Time Period	**Project Element**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
2015–2015	JWPCP West Shaft Construction	40	97	3	3
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,530	68	14	8
	CEQA/NEPA Increment	40	97	3	3
	CEQA/NEPA Significant?	No	Yes	No	No
2019–2019	Angels Gate Shaft Construction	36	64	2	2
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	967	73	8	5
	CEQA/NEPA Increment	36	64	2	2
	CEQA/NEPA Significant?	No	No	No	No

Table 5-49 (Continued)

Time Period	Project Element	Peak Day Emissions (pounds per day)			
		CO	NO_X	PM_{10}	$PM_{2.5}$
2016–2021[b]	Onshore Tunneling Emissions at the JWPCP West Shaft Site	86	148	6	5
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs	1,530	68	14	8
	CEQA/NEPA Increment	86	148	6	5
	CEQA/NEPA Significant?	No	Yes	No	No
2016–2021[b]	Offshore Tunneling Emissions at the Angels Gate Shaft Site	86	148	6	5
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs	967	73	8	5
	CEQA/NEPA Increment	86	148	6	5
	CEQA/NEPA Significant?	No	Yes	No	No

CEQA and NEPA baselines are zero for new construction at each construction location.

[a] LSTs are based on distances to receptors and site acreages, presented in Table 5-21. NO_X LST was scaled to reflect the federal NO_2 standard.

[b] The time period for tunnel construction includes both the onshore and offshore segments. Tunneling at each shaft site would not occur until after construction of the shaft, which is required to facilitate tunnel construction.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Operation of Alternative 3 (Project), which consists of using a new ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. There would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure.

CEQA Impact Determination

As presented in Table 5-49, construction of the onshore and offshore tunnel, and at the JWPCP West shaft site for Alternative 3 (Project) would result in emissions in excess of SCAQMD's LST for NO_X. Impacts under CEQA would be significant before mitigation. Operation of Alternative 3 (Project) would result in no impacts.

Mitigation

Implement MM AQ-3a through MM AQ-3e and MM AQ-3g (same as MM AQ-2a through MM AQ-2e and MM AQ-2g).

Residual Impacts

Implementation of MM AQ-3a through MM AQ-3e and MM AQ-3g would reduce construction impacts to below SCAQMD LSTs for all pollutants for Alternative 3 (Project), as shown in Table 5-50. Residual impacts would be less than significant.

Table 5-50. Alternative 3 (Project) Localized Construction Emissions With Mitigation

		Peak Day Emissions (pounds per day)			
Time Period	**Project Element**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
2015–2015	JWPCP West Shaft Construction	40	17	2	2
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	1,530	68	14	8
	CEQA/NEPA Increment	40	17	2	2
	CEQA/NEPA Significant?	No	No	No	No
2019–2019	Angels Gate Shaft Construction	36	12	1	1
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	967	73	8	5
	CEQA/NEPA Increment	36	12	1	1
	CEQA/NEPA Significant?	No	No	No	No
2016–2021[b]	Onshore Tunneling Emissions at the JWPCP West Shaft Site	86	17	2	1
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs	1,530	68	14	8
	CEQA/NEPA Increment	86	17	2	1
	CEQA/NEPA Significant?	No	No	No	No
2016–2021[b]	Offshore Tunneling Emissions at the Angels Gate Shaft Site	86	17	2	1
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs	967	73	8	5
	CEQA/NEPA Increment	86	17	2	1
	CEQA/NEPA Significant?	No	No	No	No

CEQA and NEPA baselines are zero for new construction at each construction location.

[a] LSTs are based on distances to receptors and site acreages, presented in Table 5-21. NO_X LST was scaled to reflect the federal NO_2 standard.

[b] The time period for tunnel construction includes both the onshore and offshore segments. Tunneling at each shaft site would not occur until after construction of the shaft, which is required to facilitate tunnel construction.

NEPA Impact Determination

As presented in Table 5-49, construction of the onshore and offshore tunnel, and at the JWPCP West shaft site for Alternative 3 (Project) would result in emissions in excess of SCAQMD's LST for NO_X. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 3 (Project) would result in no impacts.

Mitigation

Implement MM AQ-3a through MM AQ-3e and MM AQ-3g (same as MM AQ-2a through MM AQ-2e and MM AQ-2g).

Residual Impacts

Residual impacts would be less than significant as described under the CEQA impact determination.

Impact AQ-4. Would Alternative 3 (Project) emissions create an objectionable odor at the nearest offsite receptor?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore and Offshore); Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis
As discussed under Alternative 1 (Project), impacts associated with objectionable odors during construction of the tunnel, shaft sites, riser and diffuser, and rehabilitation of the existing ocean outfalls would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis
Similar to Alternative 1 (Project), operation of Alternative 3 (Project) would not create objectionable odors. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the project.

CEQA Impact Determination
Construction and operation of Alternative 3 (Project) would not create objectionable odors at the nearest offsite receptor. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction and operation of Alternative 3 (Project) would not create objectionable odors at the nearest offsite receptor. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact AQ-6. Would Alternative 3 (Project) expose the public to significant levels of toxic air contaminants?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore and Offshore); Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

The greatest potential for construction-related TAC emissions would be from diesel particulate emissions associated with heavy equipment operations during site grading activities. Construction activities are short-term in nature and, as such, the cancer risk exposure from diesel-related construction equipment is also short-term. The construction activities associated with Alternative 3 (Project) would take nearly 7 years, but would occur in various locations throughout the SCAB, so they would not overlap or impact a common receptor. Construction activities in any single location would be transitory and short-term. The assessment of cancer risk is typically based on a 70-year exposure period. Because exposure to diesel exhaust would be well below the 70-year exposure period at any given location, construction of Alternative 3 (Project) is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Alternative 3 (Project) activities would not result in increased operational emissions, nor would emission sources be relocated closer to sensitive receptors. There would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not expose the public to significant levels of TACs. Impacts under CEQA would be less than significant. Operation of Alternative 3 (Project) would result in no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant. Although impacts would be less than significant and no mitigation is required, implementation of MM AQ-2a through MM AQ-2g under Impact AQ-2 would further reduce exposure to TACs.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not expose the public to significant levels of TACs. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 3 (Project) would result in no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant as discussed under the CEQA impact determination.

5.4.5.4 Impact Summary – Alternative 3

Impacts on air quality analyzed in this EIR/EIS for Alternative 3 are summarized in Table 5-51. Impacts on air quality for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 5-37. Impacts analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 5-52. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 5-51. Impact Summary – Alternative 3

Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact AQ-1. Would Alternative 3 conflict with or obstruct implementation of the applicable air quality management plan?		
CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
NEPA Less Than Significant Impact During Construction	No mitigation is required.	NEPA Less Than Significant Impact During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA No Impact During Operation	No mitigation is required.	NEPA No Impact During Operation
Impact AQ-2. Would Alternative 3 emissions exceed SCAQMD daily significance thresholds for construction- and/or operation-related emissions?		
CEQA Significant Impact During Construction	**Program** MM AQ-2a. All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap.	CEQA Significant and Unavoidable Impact During Construction

Table 5-51 (Continued)

Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
	MM AQ-2b. All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM AQ-2c. Fully cover trucks hauling loose material, such as debris or fill, while operating off site. MM AQ-2d. Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction, provided that it will be available prior to commencing construction and proven reliable. MM AQ-2e. Route construction trucks away from congested streets or sensitive receptor areas as feasible.	
	Project MM AQ-2a through MM AQ-2e MM AQ-2f**.** Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles. MM AQ-2g. Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.	
NEPA Significant Impact During Construction	MM AQ-2a through MM AQ-2g.	NEPA Significant and Unavoidable Impact During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA No Impact During Operation	No mitigation is required.	NEPA No Impact During Operation

Table 5-52. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AQ-3. Would Alternative 3 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Construction	N/A	MM AQ-3a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM AQ-3b (same as MM AQ-2b). All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM AQ-3c (same as MM AQ-2c). Fully cover trucks hauling loose material, such as debris or fill, while operating off site. MM AQ-3d (same as MM AQ-2d). Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction, provided that it will be available prior to commencing construction and proven reliable. MM AQ-3e (same as MM AQ-2e). Route construction trucks away from congested streets or sensitive receptor areas as feasible. MM AQ-3g (same as MM AQ-2g). Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 5-52 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 5-52 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact AQ-4. Would Alternative 3 (Project) emissions create objectionable odors at the nearest offsite receptor?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 5-52 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 5-52 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact AQ-6. Would Alternative 3 (Project) expose the public to significant levels of toxic air contaminants?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 5-52 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

5.4.6 Alternative 4 (Recommended Alternative)

Alternative 4 (Program) is the same as Alternative 1 (Program). The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project). Alternative 4 (Project) includes a shaft site at Royal Palms Beach. The impacts for the existing ocean outfalls would be the same as for Alternative 1 (Project).

5.4.6.1 Program and Project

Impact AQ-1 and Impact AQ-2 are evaluated on a regional level and thus analyzed for the combined emissions of construction/operation activities that would occur concurrently for the program and project.

Impact AQ-1. Would Alternative 4 conflict with or obstruct implementation of the applicable air quality management plan?

Construction

CEQA Analysis

The purpose of the 2007 AQMP is to set forth a comprehensive program to bring the SCAB into compliance with all federal and state air quality planning requirements. Therefore, it is appropriate to address compliance on a regional level by evaluating the concurrent impacts associated with the program and the project. Alternative 4 (Program) is the same as Alternative 1 (Program). Construction of program elements would produce emissions of nonattainment pollutants, primarily in the form of diesel exhaust and fugitive dust. Compliance with the requirements of the AQMP and SCAQMD rules and regulations would ensure that construction of Alternative 4 (Program) would not conflict with or obstruct implementation of the AQMP. Construction of Alternative 4 (Project) would produce emissions of nonattainment pollutants, primarily in the form of diesel exhaust and fugitive dust. Similar to Alternative 1 (Project), Alternative 4 (Project) would comply with attainment strategies outlined in the 2007 AQMP and enforced at the state and federal level. Alternative 4 would, therefore, not conflict with or obstruct implementation of the AQMP. Impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. Therefore, under NEPA, the impacts associated with construction of the combined program and project for Alternative 4 would be the same as for Alternative 4 (Project), and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Alternative 4 (Program), which is the same as Alternative 1 (Program), uses SCAG's population forecasts for the JOS service area through the year 2050, which are included in the 2007 AQMP. Operation of Alternative 4 (Project), which consists of using a modified ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. Alternative 4 would, therefore, not conflict with or obstruct implementation of the AQMP. Impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from operation of program elements. Therefore, under NEPA, the impacts associated with operation of the combined program and project for Alternative 4 would be the same as for Alternative 4 (Project). Operational project emissions would be zero because the tunnel and outfall system would emit no pollutants. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 4 would not conflict with or obstruct implementation of the AQMP. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 would not conflict with or obstruct implementation of the AQMP. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation would result in no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-2. Would Alternative 4 exceed the SCAQMD daily significance thresholds for construction- and/or operation-related emissions?

See Impact AQ-2 under Alternative 1 for a discussion of emissions-based thresholds used to assess the potential significance of criteria air pollutants at the regional level for peak day emissions for the combined program and project.

Construction

CEQA Analysis

Alternative 4 (Program) is the same as Alternative 1 (Program). Construction of Alternative 4 (Project) is anticipated to occur over a 78-month active construction period, starting in the first quarter of 2015 and concluding in the second quarter of 2021. For this analysis, emissions resulting from construction-related activities reflect conservative assumptions based on a construction scenario wherein construction would occur in a relatively intensive manner. Because of this conservative assumption, actual emissions could be less than those presented here. If construction were delayed or were to occur over a longer period of time, emissions could be reduced because of (1) a more modern and cleaner burning construction equipment fleet mix, and/or (2) a less-intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval). The construction equipment mix and duration for each construction stage is detailed in the construction spreadsheets provided in Appendix 5-B.

Peak day criteria pollutant emissions associated with Alternative 4 construction activities are presented in Table 5-53. Peak day emissions for each construction phase were determined by summing emissions from those construction activities that overlap in the proposed construction schedule. In the case where more than one possible combination of activities would occur during the same phase, emissions were calculated for all possible combinations, and the combination producing the greatest emissions was reported.

Table 5-53. Alternative 4 Under CEQA Peak Day Construction Emissions Without Mitigation

Time Period	Element	Peak Day Emissions (pounds per day)					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Program							
2018–2050	JWPCP Solids Processing	5	29	42	0	21	6
2018–2028	SJCWRP Process Optimization	5	29	42	0	9	3
2018–2028	POWRP Process Optimization	4	20	29	0	3	2
2018–2028	LCWRP Process Optimization	5	28	40	0	6	2
2018–2028	LBWRP Process Optimization	5	28	40	0	6	2
2035–2040	SJCWRP Plant Expansion	4	21	30	0	12	3
2018–2028	Peak Day Emissions[a]	25	133	192	0	45	15
Project							
2015–2015	JWPCP West Shaft Site Construction	25	94	244	0	12	10
2016–2020	Onshore Tunnel Alignment	32	183	371	1	18	15
2019–2021	Royal Palms Shaft Site Construction	18	75	158	0	8	6
2019–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2019–2020	Peak Day Emissions[b]	51	287	551	1	27	22
Concurrent Peak Day Emissions[c]		76	420	744	1	72	37
Significance Thresholds		75	550	100	150	150	55
CEQA Increment[d]		76	420	744	1	72	37
CEQA Significant?		Yes	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day program construction emissions would occur during 2018 through 2028 if JWPCP solids processing and process optimization at the WRPs were constructed at the same time.

[b] Peak day project construction emissions would occur in 2019 and 2020 when construction of the Royal Palms shaft overlaps with tunneling activities and existing ocean outfalls rehabilitation.

[c] Concurrent peak day emissions would occur in 2019 and 2020 when construction of the JWPCP solids processing facilities, process optimization at the WRPs, the onshore tunnel, the Royal Palms shaft, and the existing ocean outfalls rehabilitation occurred concurrently.

[d] CEQA increment is equivalent to concurrent peak day emissions because the CEQA baseline is zero for new construction.

Due to a lengthy construction period, Alternative 4 (Project) construction could overlap with Alternative 4 (Program) construction, specifically during process optimization of the WRPs. Concurrent peak day program and project emissions were estimated in each year during which construction from Alternative 4 (Project) and Alternative 4 (Program) could potentially overlap. The combination of peak day program and project emissions that would result in the greatest concurrent emissions is shown in Table 5-53. The concurrent peak day emissions from Alternative 4 construction would occur in 2019 for all criteria pollutants if construction of the JWPCP solids processing facilities, process optimization at the WRPs, the onshore tunnel, the Royal Palms shaft, and the existing ocean outfalls rehabilitation occurred concurrently. Impacts would be significant for VOC and NO_X emissions.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. Therefore, under NEPA, the impacts associated with construction of the combined program and project for Alternative 4 would be the same as for Alternative 4 (Project), and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. Impacts under NEPA are presented in Table 5-54. Impacts would be significant for NO_X emissions.

Table 5-54. Alternative 4 Under NEPA Peak Day Construction Emissions Without Mitigation

		Peak Day Emissions (pounds per day)					
Time Period	**Project Element**	**VOC**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2015–2015	JWPCP West Shaft Site Construction	25	94	244	0	12	10
2016–2020	Onshore Tunnel Alignment	32	183	371	1	18	15
2019–2021	Royal Palms Shaft Site Construction	18	75	158	0	8	6
2019–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2019–2020	Peak Day Emissions[a]	51	287	551	1	27	22
Significance Thresholds		75	550	100	150	150	55
NEPA Increment		51	287	551	1	27	22
NEPA Significant?[b]		No	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day emissions would occur in 2019 and 2020 when construction of the Royal Palms shaft overlaps with tunneling activities and existing ocean outfalls rehabilitation.

[b] The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions from construction of program elements. NEPA significance need not be determined for program and project concurrently because federal activities would occur under project only.

Operation

CEQA Analysis

Operational emissions would result from program elements only; there would be no operational activities resulting in criteria pollutant emissions or impacts from project elements. Operational emissions associated with Alternative 4 (Program) would be the same as Alternative 1 (Program). As shown in Table 5-27, impacts would be less than significant.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. Operation of Alternative 4 (Project), which consists of using a modified ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. There would be no impacts under NEPA.

CEQA Impact Determination

Construction of Alternative 4 would exceed SCAQMD's significance thresholds for construction-related emissions for VOC and NO_X, as presented in Table 5-53. Impacts under CEQA would be significant before mitigation. As presented in Table 5-27, operation of Alternative 4 would result in less than significant impacts.

Mitigation

Program

Implement MM AQ-2a through MM AQ-2e.

Project

Implement MM AQ-2a through MM AQ-2g.

Residual Impacts

Implementation of MM AQ-2a through MM AQ-2g would reduce construction-related emissions for program and project elements. Peak day criteria pollutant emissions associated with mitigated project construction are presented in Table 5-55 for Alternative 4. Due to a lengthy construction period,

Alternative 4 (Project) construction could overlap with Alternative 4 (Program) construction. Concurrent peak day program and project emissions were estimated in each year during which construction from Alternative 4 (Project) and Alternative 4 (Program) could potentially overlap. The combination of peak day program and project emissions that would result in the greatest concurrent emissions is reported in Table 5-55.

Table 5-55. Alternative 4 Under CEQA Peak Day Construction Emissions With Mitigation

		Peak Day Emissions (pounds per day)					
Time Period	**Element**	**VOC**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Program							
2018–2050	JWPCP Solids Processing	2	29	16	0	21	5
2018–2028	SJCWRP Process Optimization	2	29	16	0	8	2
2018–2028	POWRP Process Optimization	1	20	13	0	3	1
2018–2028	LCWRP Process Optimization	2	28	15	0	5	2
2018–2028	LBWRP Process Optimization	1	28	14	0	5	2
2035–2040	SJCWRP Plant Expansion	1	21	10	0	12	3
2018–2028	Peak Day Emissions[a]	8	133	73	0	41	12
Project							
2015–2015	JWPCP West Shaft Site Construction	8	68	81	0	5	4
2016–2020	Onshore Tunnel Alignment	16	147	125	1	8	5
2019–2021	Royal Palms Shaft Site Construction	7	64	72	0	5	3
2019–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2019–2020	Peak Day Emissions[b]	24	241	220	1	13	9
Concurrent Peak Day Emissions[c]		32	374	293	1	36	17
Significance Thresholds		75	550	100	150	150	55
CEQA Increment[d]		32	374	293	1	36	17
CEQA Significant?		No	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day program construction emissions would occur during 2018 through 2029 if JWPCP solids processing and process optimization at the WRPs were constructed at the same time.

[b] Peak day project construction emissions would occur in 2019 and 2020 when construction of the Royal Palms shaft overlaps with tunneling activities and existing ocean outfalls rehabilitation.

[c] Concurrent peak day emissions would occur in 2019 and 2020 when construction of the JWPCP solids processing facilities, process optimization at the WRPs, the onshore tunnel, Royal Palms shaft, and the existing ocean outfalls rehabilitation occurred concurrently.

[d] CEQA increment is equivalent to the concurrent peak day emissions because the CEQA baseline is zero for new construction.

The peak day emissions from concurrent project and program construction would occur in 2019 for all criteria pollutants if construction of the JWPCP solids processing facilities, process optimization at the WRPs, the onshore tunnel, Royal Palms shaft and the existing ocean outfalls rehabilitation occurred concurrently.

The CEQA residual impact determination for construction impacts is made on a regional level for Alternative 4 in Table 5-55. Although implementation of the mitigation measures would reduce emissions, NO_X would still exceed the SCAQMD significance threshold following mitigation for Alternative 4 under CEQA. Therefore, residual impacts would be significant and unavoidable on a regional level during construction. Impacts would be less than significant during operation.

NEPA Impact Determination

Construction of Alternative 4 would exceed the SCAQMD significance threshold for construction-related emissions for NO_X, as presented in Table 5-54. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 4 would result in no impacts.

Mitigation

Program

Implement MM AQ-2a through MM AQ-2e.

Project

Implement MM AQ-2a through MM AQ-2g.

Residual Impacts

Peak day criteria pollutant emissions associated with mitigated construction are presented in Table 5-56 for Alternative 4.

Table 5-56. Alternative 4 Under NEPA Peak Day Construction Emissions With Mitigation

Time Period	Project Element	Peak Day Emissions (pounds per day)					
		VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
2015–2015	JWPCP West Shaft Site Construction	8	68	81	0	5	4
2016–2020	Onshore Tunnel Alignment	16	147	125	1	8	5
2019–2021	Royal Palms Shaft Site Construction	7	64	72	0	5	3
2019–2020	Existing Ocean Outfalls Rehabilitation	1	29	23	0	1	1
2019–2020	Peak Day Emissions[a]	24	241	220	1	13	9
Significance Thresholds		75	550	100	150	150	55
NEPA Increment		24	241	220	1	13	9
NEPA Significant?[b]		No	No	Yes	No	No	No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Peak day emissions would occur in 2019 and 2020 when construction of the Royal Palms shaft overlaps with tunneling activities and existing ocean outfalls rehabilitation.

[b] NEPA baseline is equivalent to all activities that would occur absent federal action. As such, the NEPA baseline is equivalent to the emissions from construction of the program elements.

As shown in Table 5-56, although implementation of MM AQ-2a through MM AQ-2g would reduce construction-related emissions, NO_X emissions would still exceed the SCAQMD significance threshold following mitigation for Alternative 4 under NEPA. Therefore, residual impacts would be significant and unavoidable during construction. Operation of Alternative 4 would result in no impacts.

5.4.6.2 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

5.4.6.3 Project

Impacts AQ-3, AQ-4, and AQ-6 are evaluated on a localized level and thus analyzed separately for project and program.

Impact AQ-3. Would Alternative 4 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore); Shaft Site – Royal Palms

Construction

CEQA Analysis

The impacts for construction of the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project). Daily emissions during construction of the onshore tunnel would be localized at the JWPCP West shaft site, and impacts associated with these emissions would also be the same as for Alternative 3 (Project). The impacts for the existing ocean outfalls would be the same as for Alternative 1 (Project). Additionally, Alternative 4 (Project) includes construction of the Royal Palms shaft site. The distance to the nearest existing sensitive receptor at the Royal Palms shaft site is summarized in Table 5-21 and shown on Figure 5-16. Onsite construction emissions for the additional element under Alternative 4 (Project) are presented in Table 5-57.

Under this alternative, after completion of the JWPCP West shaft site, one TBM would tunnel from the JWPCP West shaft site toward the Royal Palms shaft site. All tunneling emissions would be emitted at the JWPCP West shaft site until the TBM reaches the Royal Palms site; there would be no tunneling emissions attributable to the Royal Palms shaft site.

As shown in Table 5-57, impacts would be significant for NO_X at the Royal Palms shaft site during construction.

Table 5-57. Alternative 4 (Project) Localized Construction Emissions Without Mitigation

		Peak Day Emissions (pounds per day)			
Time Period	**Project Elements**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
2019–2021	Royal Palms Shaft Site Construction	36	64	3	2
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	664	51	5	3
	CEQA/NEPA Increment	36	64	3	2
	CEQA/NEPA Significant?	No	Yes	No	No

CEQA and NEPA baselines are zero for new construction at each construction location.

[a] LSTs are based on distances to receptors and site acreages, presented in Table 5-21. NO_X LST was scaled to reflect the federal NO_2 standard.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Operation of Alternative 4 (Project), which consists of using a modified ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, would not emit criteria pollutants. There would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure.

CEQA Impact Determination

Construction of the onshore tunnel and at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) would result in emissions in excess of SCAQMD's LST for NO_X. Impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in no impacts.

Mitigation

Implement MM AQ-3a through MM AQ-3e and MM AQ-3g (same as MM AQ-2a through MM AQ-2e and MM AQ-2g).

Residual Impacts

Implementation of MM AQ-3a through MM AQ-3e and MM AQ-3g would reduce construction impacts to below SCAQMD LSTs for all pollutants for Alternative 4 (Project), as shown in Table 5-58. Residual impacts would be less than significant.

Table 5-58. Alternative 4 (Project) Localized Construction Emissions With Mitigation

		Peak Day Emissions (pounds per day)			
Time Period	**Project Element**	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**
2019–2021	Royal Palms Shaft Site Construction	36	12	1	1
	CEQA/NEPA Baseline	0	0	0	0
	SCAQMD LSTs[a]	664	51	5	3
	CEQA/NEPA Increment	36	12	1	1
	CEQA/NEPA Significant?	No	No	No	No

CEQA and NEPA baselines are zero for new construction at each construction location.

[a] LSTs are based on distances to receptors and site acreages, presented in Table 5-21. NO_X LST was scaled to reflect the federal NO_2 standard.

NEPA Impact Determination

Construction of the onshore tunnel and at the JWPCP West and the Royal Palms shaft site for Alternative 4 (Project) would result in emissions in excess of SCAQMD's LST for NO_X. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 4 (Project) would result in less than significant impacts.

Mitigation

Implement MM AQ-3a through MM AQ-3e and MM AQ-3g (same as MM AQ-2a through MM AQ-2e and MM AQ-2g).

Residual Impacts

Residual impacts would be less than significant as described under the CEQA impact determination.

Impact AQ-4. Would Alternative 4 (Project) emissions create an objectionable odor at the nearest offsite receptor?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore); Shaft Site – Royal Palms

Construction

CEQA Analysis
As discussed under Alternative 1(Project), impacts associated with objectionable odors during construction of the tunnel, shaft sites, riser and diffuser, and rehabilitation of the existing ocean outfalls would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis
Similar to Alternative 1 (Project), operation of Alternative 4 (Project) would not create objectionable odors. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the project.

CEQA Impact Determination
Construction and operation of Alternative 4 (Project) would not create objectionable odors at the nearest offsite receptor. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction and operation of Alternative 4 (Project) would not create objectionable odors at the nearest offsite receptor. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact AQ-6. Would Alternative 4 (Project) expose the public to significant levels of toxic air contaminants?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore); Shaft Site – Royal Palms

Construction

CEQA Analysis

The greatest potential for construction-related TAC emissions would be from diesel particulate emissions associated with heavy equipment operations during site grading activities. Construction activities are short-term in nature and, as such, the cancer risk exposure from diesel-related construction equipment is also short-term. The construction activities associated with Alternative 4 (Project) would take nearly 7 years, but would occur in various locations throughout the SCAB, so they would not overlap or impact a common receptor. Construction activities in any single location would be transitory and short-term. The assessment of cancer risk is typically based on a 70-year exposure period. Because exposure to diesel exhaust would be well below the 70-year exposure period at any given location, construction of Alternative 4 (Project) is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature of construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction.

Operation

CEQA Analysis

Alternative 4 (Project) activities would not result in increased operational emissions, nor would emission sources be relocated closer to sensitive receptors. There would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not expose the public to significant levels of TACs. Impacts under CEQA would be less than significant. Operation of Alternative 4 (Project) would result in no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant. Although impacts would be less than significant and no mitigation is required, implementation of MM AQ-2a through MM AQ-2g under Impact AQ-2 would further reduce exposure to TACs.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not expose the public to significant levels of TACs. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 4 (Project) would result in no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant as discussed under the CEQA impact determination.

5.4.6.4 Impact Summary – Alternative 4

Impacts on air quality analyzed in this EIR/EIS for Alternative 4 are summarized in Table 5-59. Impacts on air quality for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 5-37. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 5-60. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 5-59. Impact Summary – Alternative 4

Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact AQ-1. Would Alternative 4 conflict with or obstruct implementation of the applicable air quality management plan?		
CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
NEPA Less Than Significant Impact During Construction	No mitigation is required.	NEPA Less Than Significant Impact During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA No Impact During Operation	No mitigation is required.	NEPA No Impact During Operation
Impact AQ-2. Would Alternative 4 emissions exceed SCAQMD daily significance thresholds for construction- and/or operation-related emissions?		
CEQA Significant Impact During Construction	**Program** MM AQ-2a. All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM AQ-2b. All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap.	CEQA Significant and Unavoidable Impact During Construction

Table 5-59 (Continued)

Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
	MM AQ-2c. Fully cover trucks hauling loose material, such as debris or fill, while operating off site. MM AQ-2d. Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction, provided that it will be available prior to commencing construction and proven reliable. MM AQ-2e. Route construction trucks away from congested streets or sensitive receptor areas as feasible.	
	Project MM AQ-2a through MM AQ-2e MM AQ-2f**.** Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles. MM AQ-2g. Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.	
NEPA Significant Impact During Construction	MM AQ-2a through MM AQ-2g.	NEPA Significant and Unavoidable Impact During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA No Impact During Operation	No mitigation is required.	NEPA No Impact During Operation

Table 5-60. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AQ-3. Would Alternative 4 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Construction	N/A	MM AQ-3a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM AQ-3b (same as MM AQ-2b). All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM AQ-3c (same as MM AQ-2c). Fully cover trucks hauling loose material, such as debris or fill, while operating off site. MM AQ-3d (same as MM AQ-2d). Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction, provided that it will be available prior to commencing construction and proven reliable. MM AQ-3e (same as MM AQ-2e). Route construction trucks away from congested streets or sensitive receptor areas as feasible. MM AQ-3g (same as MM AQ-2g). Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 5-60 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Royal Palms	CEQA Significant Impact During Construction	N/A	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact AQ-4. Would Alternative 4 (Project) emissions create objectionable odors at the nearest offsite receptor?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 5-60 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 5-60 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact AQ-6. Would Alternative 4 (Project) expose the public to significant levels of toxic air contaminants?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 5-60 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

5.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an EIR must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

5.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the SJCWRP, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994) and to permitting and existing regulatory requirements during time of construction. Emissions during Alternative 5 (Program) construction are shown in Table 5-61. Impacts would be less than significant.

Table 5-61. Alternative 5 (Program) Peak Day Construction Emissions Without Mitigation

		Peak Day Emissions (pounds per day)					
Time Period	**Program Element**	**VOC**	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
2018–2050	JWPCP Solids Processing	5	29	42	0	21	6
2035–2040	SJCWRP Plant Expansion	4	21	30	0	12	3
2035–2040	Peak Day Emissions[a]	10	50	72	0	33	9
Significance Thresholds		75	550	100	150	150	55
CEQA Increment		10	50	72	0	33	9
CEQA Significant?		No	No	No	No	No	No

The CEQA baseline is zero for new construction.

[a] Peak day emissions would occur during 2035 through 2040 if JWPCP solids processing and SJCWRP plant expansion were constructed concurrently.

Operational emissions associated with Alternative 5 (Program) would be the same as Alternative 1 (Program), excluding process optimization at the WRPs. Emissions during Alternative 5 (Program) operations would be the same as those presented in Table 5-27.

5.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. The emergency discharges would not result in impacts on the air quality resource area, as the discharge would consist of water flowing primarily by gravity. However, in the event of an emergency discharge of effluent, there could be impacts related to objectionable odors. This would be a temporary and localized occurrence, and the Sanitation Districts would take immediate action. The Sanitation Districts have spill prevention and response policies and procedures that would reduce odor impacts from a spill. These include responding to the scene as soon as possible, typically within 1 hour of notification; containing the overflow as close as practical to the overflow location; stopping the flow as soon as possible; preventing public contact with spilled wastewater; and recovering spilled wastewater and returning it to the sewer system (Sanitation Districts 2006b, 2008b). Impacts would be less than significant.

5.4.7.3 Impact Summary – Alternative 5

Impacts on air quality analyzed in this EIR/EIS for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 5-37 for Impact AQ-3, Impact AQ-4, and Impact AQ-6, excluding process optimization. Note that the mitigation measures for Alternatives 1 through 4 (Program) are not applicable to Alternative 5 (Program). Alternative 5 would not include a project; therefore, Impact AQ-1 and Impact AQ-2 would apply to the program only, and as demonstrated in Table 5-61, impacts from peak day emission would be less than significant. There would be less than significant air quality impacts for Alternative 5 (Project).

5.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses as described in Sections 3.4.1.6 and 5.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

5.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

5.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

5.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Project impacts would be the same as discussed under Alternative 5 (Project); therefore, there would be no significant impacts on air quality for Alternative 6 (Project).

5.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on air quality resulting from the construction and/or operation of program and/or project elements is provided in Table 5-62. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 5-62. Comparison of Significant Impacts and Mitigation for Air Quality for All Alternatives

Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Alternatives 1, 2, 3, and 4		
Impact AQ-2. Would Alternatives 1 through 4 emissions exceed SCAQMD daily significance thresholds for construction- and/or operation-related emissions?		
CEQA Significant Impact During Construction	**Program** MM AQ-2a. All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM AQ-2b. All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM AQ-2c. Fully cover trucks hauling loose material, such as debris or fill, while operating off site. MM AQ-2d. Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction, provided that it will be available prior to commencing construction and proven reliable. MM AQ-2e. Route construction trucks away from congested streets or sensitive receptor areas as feasible.	CEQA Significant and Unavoidable Impact During Construction

Table 5-62 (Continued)

Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
	Project MM AQ-2a through MM AQ-2e MM AQ-2f. Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles. MM AQ-2g. Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.	
NEPA Significant Impact During Construction	MM AQ-2a through MM AQ-2g	NEPA Significant and Unavoidable Impact During Construction

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 1 (Project)			
Impact AQ-3. Would Alternative 1 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?			
Tunnel Alignment – Wilmington to SP Shelf (Onshore)	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Indirect) During Construction
Tunnel Alignment – Wilmington to SP Shelf (Offshore)	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Direct) During Construction
Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 2 (Project)			
Impact AQ-3. Would Alternative 2 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?			
Tunnel Alignment – Wilmington to PV Shelf (Onshore)	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Indirect) During Construction

Table 5-62 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Tunnel Alignment – Wilmington to PV Shelf (Offshore)	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Direct) During Construction
Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 3 (Project)			
Impact AQ-3. Would Alternative 3 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?			
Tunnel Alignment – Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Indirect) During Construction
Tunnel Alignment – Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Direct) During Construction
Shaft Site – JWPCP West	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 4 (Project)			
Impact AQ-3. Would Alternative 4 (Project) result in emissions in excess of SCAQMD's Localized Significance Thresholds?			
Tunnel Alignment – Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Indirect) During Construction

Table 5-62 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Shaft Sites – JWPCP West and Royal Palms	CEQA Significant Impact During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AQ-3a through MM AQ-3e (same as MM AQ-2a through MM AQ-2e) MM AQ-3g (same as MM AQ-2g)	NEPA Less Than Significant Impact (Indirect) During Construction

Chapter 6
BIOLOGICAL RESOURCES (TERRESTRIAL)

6.1 Introduction

This chapter describes the existing environmental and regulatory settings for terrestrial biological resources, analyzes the potential impacts on habitat and species that would result from the implementation of the program elements and project elements, and determines the significance of those impacts. Where feasible and if necessary, mitigation measures are provided to reduce or avoid impacts.

Biological resource issues refer to the compatibility of development with biological resources. This includes potential impacts on federally or state-listed threatened or endangered species and their designated critical habitat, and impacts on migratory birds and sensitive natural communities, such as riparian habitat, wetlands, wildlife corridors, and plant communities, regulated by federal, state, or local legislation. This chapter discusses these issues associated with the construction and operation of program and project elements of the Sanitation Districts of Los Angeles County (Sanitation Districts) Clearwater Program.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the terrestrial biological resources impact analysis for each program element is summarized by alternative in Table 6-1.

Table 6-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	C
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	C
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	O
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	O
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 6-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	O
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	C
Biosolids Management	X	X	X	X	X	N/A	O	-
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 6-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 6.4.7 for a discussion of the No-Project Alternative.
[b] See Section 6.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the terrestrial biological resources impact analysis for each project element is summarized by alternative in Table 6-2.

Table 6-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	-
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	-
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	-
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	-
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	-
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	-
Figueroa/ Western to Royal Palms (onshore)				X	N/A	N/A	C,O	-
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C
JWPCP West			X	X	N/A	N/A	C,O	C
TraPac	X	X			N/A	N/A	C,O	-
LAXT	X	X			N/A	N/A	C,O	C
Southwest Marine	X	X			N/A	N/A	C,O	-
Angels Gate			X		N/A	N/A	C,O	C
Royal Palms				X	N/A	N/A	C,O	C

Table 6-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	See Chapter 13.	
PV Shelf		X	X		N/A	N/A	See Chapter 13.	
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	See Chapter 13.	

[a] See Section 6.4.7 for a discussion of the No-Project Alternative.
[b] See Section 6.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

Special-status species with no potential to occur in the study area are discussed in the Preliminary Screening Analysis (Appendix 1-A). The Preliminary Screening Analysis also provides a discussion of special-status species that occur in the study area. It was determined during preliminary screening that the Clearwater Program would result in less than significant impacts on special-status plant species and the federally and state-listed endangered Palos Verdes blue butterfly; therefore, these species are not discussed further in this chapter. For additional information regarding these species, refer to the Preliminary Screening Analysis (Appendix 1-A).

6.2 Environmental Setting

6.2.1 Regional Setting

The Joint Outfall System (JOS) is located in the central, southern, and eastern portions of Los Angeles County. Its boundaries extend from the San Gabriel Mountain foothills south to the Palos Verdes Peninsula and San Pedro Bay, and from the San Bernardino County and Orange County borders west to the cities of Glendale and Los Angeles and to Santa Monica Bay. The three major rivers in the JOS are the Rio Hondo, Los Angeles, and San Gabriel. Major creeks include San Jose and Coyote. Refer to Figure 2-1 in Section 2.2.3 for an illustration of the region and its water features.

Much of the region has become urbanized, but many biologically important and extensive spaces remain, including Arroyo Seco (Devils Gate) Park, Hahamonga Watershed Park, Eaton Canyon Park, Santa Fe Flood Control Basin, Whittier Narrows Recreation Area, Puente Hills (under the Puente Hills Landfill Native Habitat Preservation Authority), San Jose Hills (Puddingstone Reservoir and Frank G. Bonnelli Park), El Dorado Regional Park, Ken Malloy Regional Park, and Palos Verdes Hills. Along the coast, the Palos Verdes Peninsula is biologically important, containing the area managed under the City of Rancho Palos Verdes Multi-Species Habitat Conservation Plan (MSHCP). Dozens of smaller areas provide stepping-stones among the larger open spaces; many of these are designated as significant ecological areas (SEAs) by Los Angeles County.

Natural vegetation communities present within the region include pine forest, chaparral, sage scrub, grassland, woodland (e.g., walnut, oak), riparian (e.g., southern willow scrub), and marsh (e.g., freshwater, salt). These areas support special-status species as well as populations of common native plants and animals. The capacity for open space areas to continue to support native plants and animals relies on the viability of the existing open space network through wildlife corridors and landscape-level functions and values.

The Los Angeles and San Gabriel Rivers are predominately conveyed within lined concrete channels, but both have sections with important biological resources and can provide some degree of connectivity across urban spaces. The San Gabriel River channel is concrete-lined from about 0.25 mile upstream of Firestone Boulevard to a point about 0.25 mile upstream of Interstate (I-) 405. The lower 4 miles of the river is the tidal estuary. The estuarine channel has riprap banks and a fairly uniform sandy bottom (Rosenberger 2007). Salinity in the estuary fluctuates with the tide and large precipitation events, but was generally between 20 and 33 parts per thousand (ppt) during a study of the estuary conducted in July through October 2005 (Rosenberger 2007). Salinity is somewhat lower at the upper end of the estuary where salinity was about 25 ppt at the surface and about 30 ppt near the bottom, than at the downstream end where salinity was typically 27 to 33 ppt (Rosenberger 2007). Estuary waters are warm during summer months, reaching as high as 95 degrees Fahrenheit during the summer of 2005 (Rosenberger 2007). At times when there is a large volume of freshwater discharged from the San Gabriel River, salinity as low as 1 ppt has been reported in some portions of the estuary (LASGRWC and ABCL 2009).

A survey of recreational fishers indicated that the following fish species (all marine) have been caught in the estuary: gray smoothhound (*Mustelus californicus*), round stingray (*Urobatis halleri*), kelp bass (*Paralabrax clathratus*), barred sand bass (*Paralabrax nebulifer*), black perch (*Embiotoca jacksoni*), California halibut (*Paralichthys californicus*), and diamond turbot (*Pleuronichthys guttatus*) (Allen et al. 2008). In addition, three species with a wide salinity tolerance (common carp [*Cyprinus carpio carpio*], striped mullet [*Mugil cephalis*], and tilapia [*Oreochromis sp*.]) have been collected in the estuary (LASGRWC and ABCL 2009). While mullet prefer estuarine habitats and are unlikely to venture upstream into the freshwater portion of the river, carp and tilapia are less tolerant of full salinity and would only be found in the estuary when there is sufficient freshwater discharge to lower salinity. Two power plants are located along the estuary and discharge cooling water into the estuary (Rosenberger 2007).

6.2.2 Program Setting

Existing conditions with respect to biological resources within each program element are described in the following section. A discussion of hydrology relevant to aquatic and riparian habitat is also presented, with further details on hydrology provided in Chapter 11.

6.2.2.1 Conveyance System

The conveyance system consists of the Joint Outfall Trunk Sewer System depicted on Figure 2-3. The conveyance system is typically located between 5 and 25 feet below ground surface generally within public right-of-way of existing streets throughout the entire JOS service area. The biological setting for the conveyance system is, therefore, the same as the regional setting previously described. Because the conveyance system is located within developed areas, relatively few biological resources are expected to occur within the footprint of the conveyance system. However, biological resources typical of urban settings, such as habitat for nesting birds, could exist above or adjacent to portions of the conveyance system. Specific and as yet undetermined conveyance system maintenance or improvement activities would be subject to project-level review.

6.2.2.2 Water Reclamation Plants

Rivers adjacent to the water reclamation plants (WRPs) in the JOS are described in the following section. The rivers support habitat that is important to biological resources. Therefore, the rivers are first discussed, and then the habitat characteristics associated with each WRP are discussed. Major river

systems and the location of the WRPs are shown on Figure 6-1. For a broad overview of the watershed and the hydrology of the JOS, see Chapter 11.

Hydrology Relevant to Biological Resources

San Gabriel River and San Jose Creek

The San Gabriel River has an unlined channel from its origin in the San Gabriel Mountains to just north of Firestone Boulevard in the city of Downey approximately 9 miles south of the San Jose Creek Water Reclamation Plant (SJCWRP), where it becomes a concrete-lined channel. Water management structures that modulate the volume and timing of flows in these water courses include the San Gabriel Dam, located about 17.5 miles upstream of the SJCWRP; Morris Dam, located approximately 14 miles upstream; Santa Fe Dam, located approximately 6 miles upstream of the SJCWRP; Whittier Narrows Dam, located approximately 1.75 miles downstream of the SJCWRP; San Gabriel Coastal Spreading Grounds, located south of Whittier Boulevard in the city of Pico Rivera approximately 4 miles downstream of the SJCWRP; and seven rubber dams, located in the unlined channel south of the Whittier Narrows Dam. Four small grade-control weirs span the San Gabriel River channel at 1,300-to-1,400-foot intervals between the SJCWRP and the Whittier Narrows Dam. Another two small weirs are spaced 3,700 to 4,100 feet apart between the Whittier Narrows Dam and the rubber dam for the San Gabriel Coastal Spreading Grounds. The SJCWRP is located southeast of the confluence of the San Gabriel River and San Jose Creek.

The San Gabriel River and San Jose Creek are important components of flood control in the region. The Los Angeles County Flood Control District performs essential annual maintenance within the channels to maintain their design capacities. This maintenance includes annual vegetation clearing and sediment removal within approximately 507 acres of the unlined portions of the San Gabriel River and San Jose Creek. This clearing occurs in of the San Gabriel River (see Figure 6-2) from its confluence with San Jose Creek downstream to the Zone 1 Ditch and from the Whittier Narrows Dam downstream to the end of the unlined portion of the river (near discharge location SJC001). The United States (U.S.) Army Corps of Engineers (Corps) also clears channel vegetation as part of maintaining the San Gabriel River channel from the Zone 1 Ditch to the Whittier Narrows Dam. In addition, there is a small, 80-foot-long segment of San Jose Creek (Segment 1, south of Workman Mill Road approximately between Dovey Avenue and Oakman Drive) that is also cleared annually by the Los Angeles County Flood Control District.

The San Gabriel River upstream of the SJCWRP is ephemeral, carrying flows only after rainfall events, when water is being delivered for spreading from the Morris and San Gabriel Dams, and during intermittent deliveries of imported water. Downstream of the SJCWRP, flows persist during dry weather due to groundwater upwelling in San Jose Creek, WRP effluent discharges, and ambient urban runoff.

A small weir is located on the San Gabriel River approximately 4,700 feet upstream of the Whittier Narrows Dam. Here a diversion structure transfers flows from the San Gabriel River to the Rio Hondo behind the Whittier Narrows Dam via the Zone 1 Ditch. The Zone 1 Ditch is operated by the Los Angeles County Department of Public Works (LACDPW) in cooperation with the Los Angeles County Flood Control District to maximize water conservation consistent with operational needs and constraints. There is no set or predictable schedule for the quantity or timing of flow through the Zone 1 Ditch except that stormwater is not routed through the Zone 1 Ditch from the upper end (Willardson pers. comm.). A second east-west crossover channel occurs at the Whittier Narrows Dam. During storm events, the dam is closed, and water is diverted via this channel west behind the Whittier Narrows Dam where it joins the Zone 1 Ditch and flows to the Rio Hondo. The Whittier Narrows Dam is typically open during non-storm events and does not impede downstream flows.

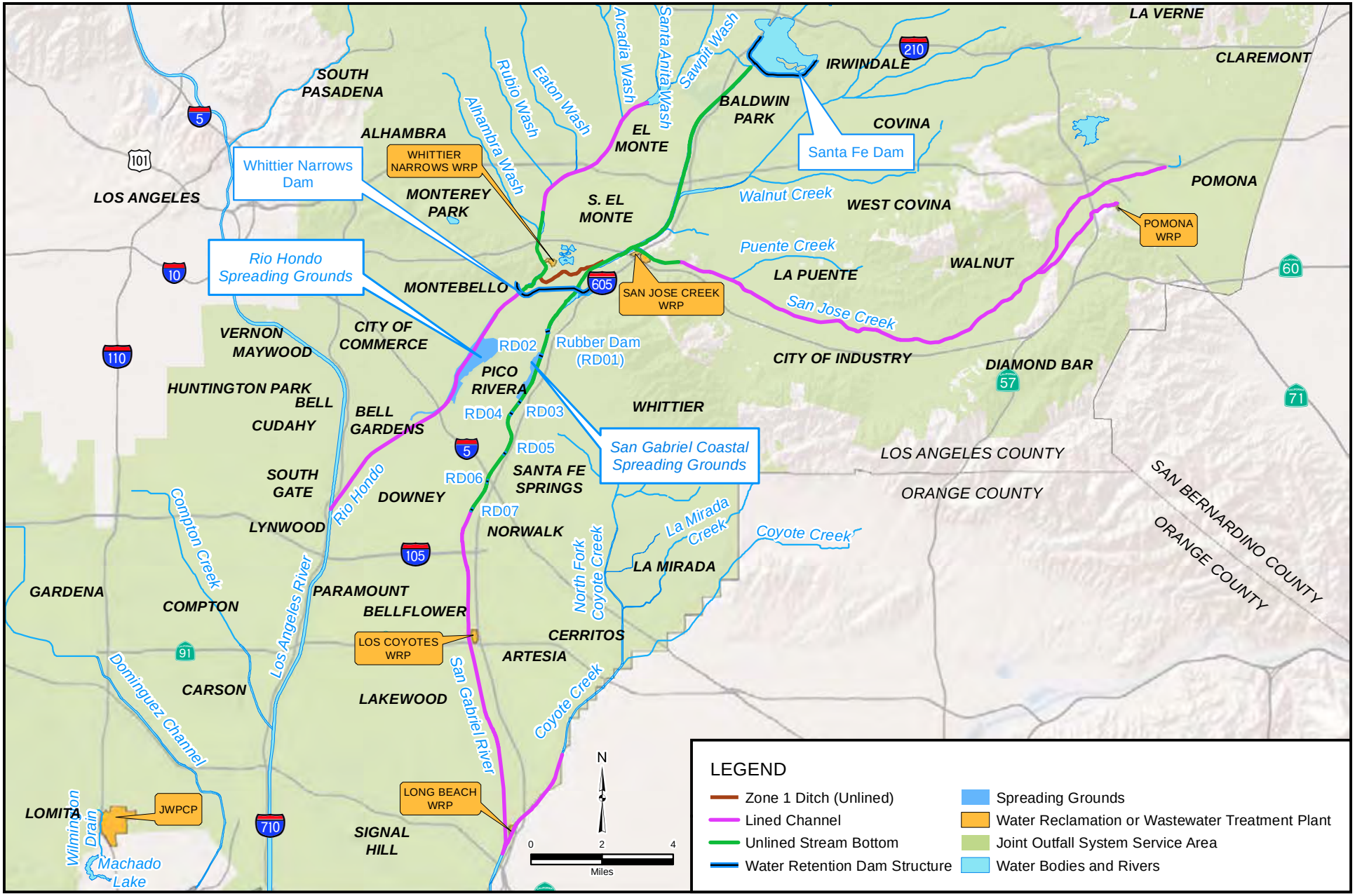


FIGURE 6-1

CLEARWATER Program

River Systems and Water Reclamation Plants

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

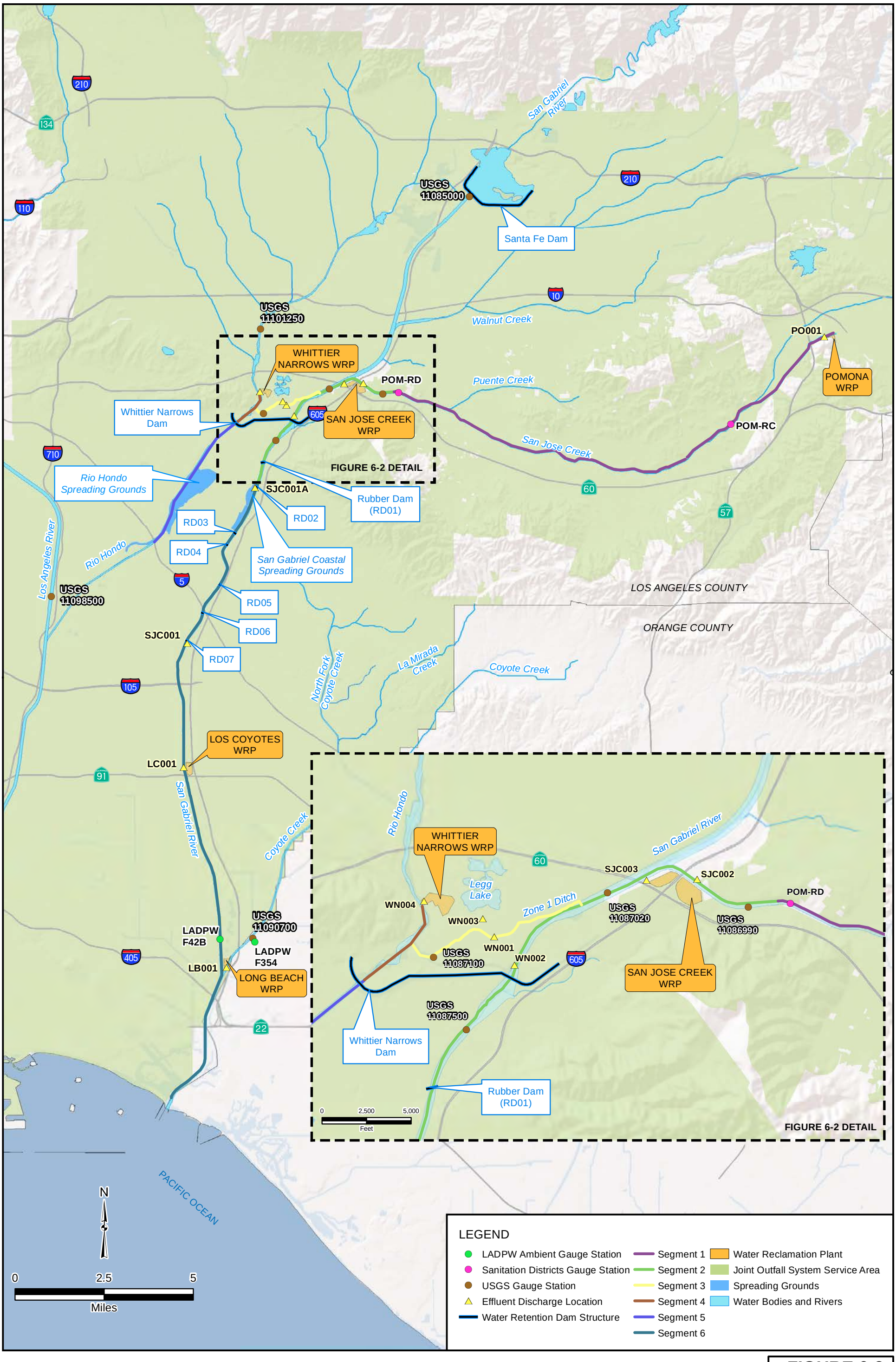


FIGURE 6-2

CLEARWATER Program

Water Reclamation Plants, Gauge Stations, and Discharge Points in the San Gabriel-Rio Hondo Watershed

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011, USGS 2011, LA County DPW 2011

Whittier Narrows and the Rio Hondo

The Rio Hondo originates at Peck Pit in North El Monte and is contained within a concrete-lined channel for approximately 4.5 miles south to Rush Street in Whittier Narrows. At this point, it transitions to an unlined channel and continues to the Whittier Narrows Dam approximately 2.5 miles south of Rush Street. Downstream of the Whittier Narrows Dam, the Rio Hondo is concrete-lined until its confluence with the Los Angeles River. The Sawpit, Santa Anita, Arcadia, Eaton, Rubio, and Alhambra Washes all drain into the lined channel of the Rio Hondo. The Rio Hondo upstream of the Whittier Narrows Water Reclamation Plant (WNWRP) is ephemeral, carrying flows only after rainfall events, when water is being delivered for spreading from the Morris and San Gabriel Dams, and during intermittent imported water deliveries. As discussed in the San Gabriel River and San Jose Creek section, water is diverted from the San Gabriel River in two locations and is transported to the Rio Hondo just north of the Whittier Narrows Dam. The Rio Hondo Coastal Spreading Grounds are located approximately 2 miles south of the Whittier Narrows Dam.

As shown on Figure 6-2, the lower San Gabriel River-Rio Hondo Watershed can be organized into six segments based on habitat, discharge points from the WRPs, and the United States Geological Survey (USGS) and Sanitation Districts gauge station locations. Tertiary-treated effluent discharge points from the WRPs in relationship to the river segments are located on Figure 6-2 and described in Table 6-3. Discharge points are listed from upstream to downstream.

Table 6-3. Effluent Discharge Locations

WRP	Effluent Discharge Location	Effluent Discharge Location Description	Stream Segment
POWRP	PO001	Lined channel of the South Fork of San Jose Creek near the POWRP	1
SJCWRP East	SJC002	Unlined channel of the San Jose Creek above the confluence with the San Gabriel River	2
SJCWRP West	SJC003	Unlined channel of the San Gabriel River below the confluence with the San Jose Creek	2
WNWRP	WN001	Unlined channel of the San Gabriel River near the Whittier Narrows Dam	2
WNWRP	WN002	Zone 1 Ditch	3
WNWRP	WN003	Test basin near Zone 1 Ditch – no longer in service	3
WNWRP	WN004	Unlined channel of the Rio Hondo upstream of the Whittier Narrows Dam	Upstream of 4
SJCWRP	SJC001A	Unlined channel of the San Gabriel River near the headworks of the San Gabriel Coastal Spreading Grounds	6
SJCWRP	SJC001	Lined channel of the San Gabriel River just upstream of Firestone Boulevard	6
LCWRP	LC001	Lined channel of the San Gabriel River upstream of SR-91	6
LBWRP	LB001	Lined channel of Coyote Creek just above its confluence with the San Gabriel River	6

Site conditions at the WRPs are described in the following section, and the focus is on the presence of any sensitive plant or animal species and regulated habitats. As indicated in the following discussion, there are no sensitive biological resources at any of the WRPs; however, there is the potential for the presence of sensitive species in the San Gabriel River and the Rio Hondo adjacent to some of the WRPs.

San Jose Creek Water Reclamation Plant

The SJCWRP (Figure 6-3) is located within unincorporated Los Angeles County, near the city of Whittier, and is bisected by I-605 into two independent but hydraulically interconnected plants known as the SJCWRP East and the SJCWRP West. Within the limits of the SJCWRP, the majority of the area is developed and includes some turf grass areas and ornamental landscaping. The sites are bound by San Jose Creek to the north, State Route (SR-) 60 to the south, and the San Gabriel River to the west. Land uses surrounding the plant consist mostly of low-density residential areas that are intermixed with an industrial area to the south. The California Country Club is located to the northeast. The SJCWRP has the following discharges: SJC001 discharges 41 to 69 million gallons per day (MGD) on an annual average basis to the lined portion of the San Gabriel River approximately 1,000 feet upstream of Firestone Boulevard, SJC001A discharges to the unlined portion of San Gabriel River adjacent to the San Gabriel Coastal Spreading Grounds, SJC002 discharges 6 to 15 MGD annually to the unlined portion of San Jose Creek adjacent to the SJCWRP East, and SJC003 discharges 24 MGD on an annual average basis to the unlined portion of the San Gabriel River adjacent to the SJCWRP West.

San Jose Creek is concrete-lined for many miles upstream of the SJCWRP, but the lowermost 6,000 feet of the channel is unlined and supports limited riparian habitat. The San Gabriel River channel also supports riparian habitat from approximately 2,200 feet upstream of the confluence with San Jose Creek to approximately 2,600 feet upstream of the San Gabriel Coastal Spreading Grounds rubber dams (approximately 22,000 linear feet or 4.2 miles) (Figure 6-3). The quality of the riparian habitat varies from sparse (low) to dense (high). The riparian habitat within the San Gabriel River provides suitable habitat for the following listed species: least Bell's vireo (federally and state-listed endangered), yellow-breasted chat and yellow warbler (state species of special concern), and western pond turtle (state species of special concern). Least Bell's vireo has been identified as occurring in the San Gabriel River during various biological surveys (BonTerra 2003; Aspen 2009; EDAW 2010; Biogeographic Information and Observation System [BIOS] 2010).

The Whittier Narrows Recreation Area is located immediately downstream of the SJCWRP and is listed as SEA-42 (Los Angeles County Department of Regional Planning 2009) (see discussion under the Whittier Narrows Water Reclamation Plant). The Rio Hondo College Wildlife Sanctuary is another SEA shown on Figure 6-3; however, this sanctuary is too distant and separated from the program elements by highways and roads to be affected by any program elements. The San Gabriel River downstream of the Whittier Narrows Dam does not support native fish, although non-native carp (*Cyprinus carpio*), green sunfish (*Lepomis cyanellus*), bluegill (*Lepomis macrochirus*), tilapia (*Oreochromis mossambicus*), and catfish (*Ameiurus sp.*) have been found (DeShazo 2007). As discussed in Chapter 11, tilapia have a high salinity tolerance and inhabit both the estuary and influent streams, including the San Gabriel River and Coyote Creek. Tilapia are non-native, and they are regarded by the California Department of Fish and Game (CDFG) as an invasive and undesirable species. The Sanitation Districts and CDFG have agreed to manage flows in the San Gabriel River in a manner to avoid fish kills of these species because such kills would be a nuisance (Markle pers. comm.).

Pomona Water Reclamation Plant

The Pomona Water Reclamation Plant (POWRP) is located 2.3 miles up a southern tributary to San Jose Creek in the city of Pomona (Figure 6-4). The Union Pacific Railroad is located along the north boundary of the POWRP. Undeveloped land with native vegetation, shown as Elephant Hill on the USGS topographic quadrangle, rises to an approximately 1,140-foot elevation to the south of the POWRP. The remaining vicinity is developed with industrial uses to the north and residential development to the south. Within the limits of the POWRP, the majority of the area is developed and includes turf grass and other ornamental landscaping.

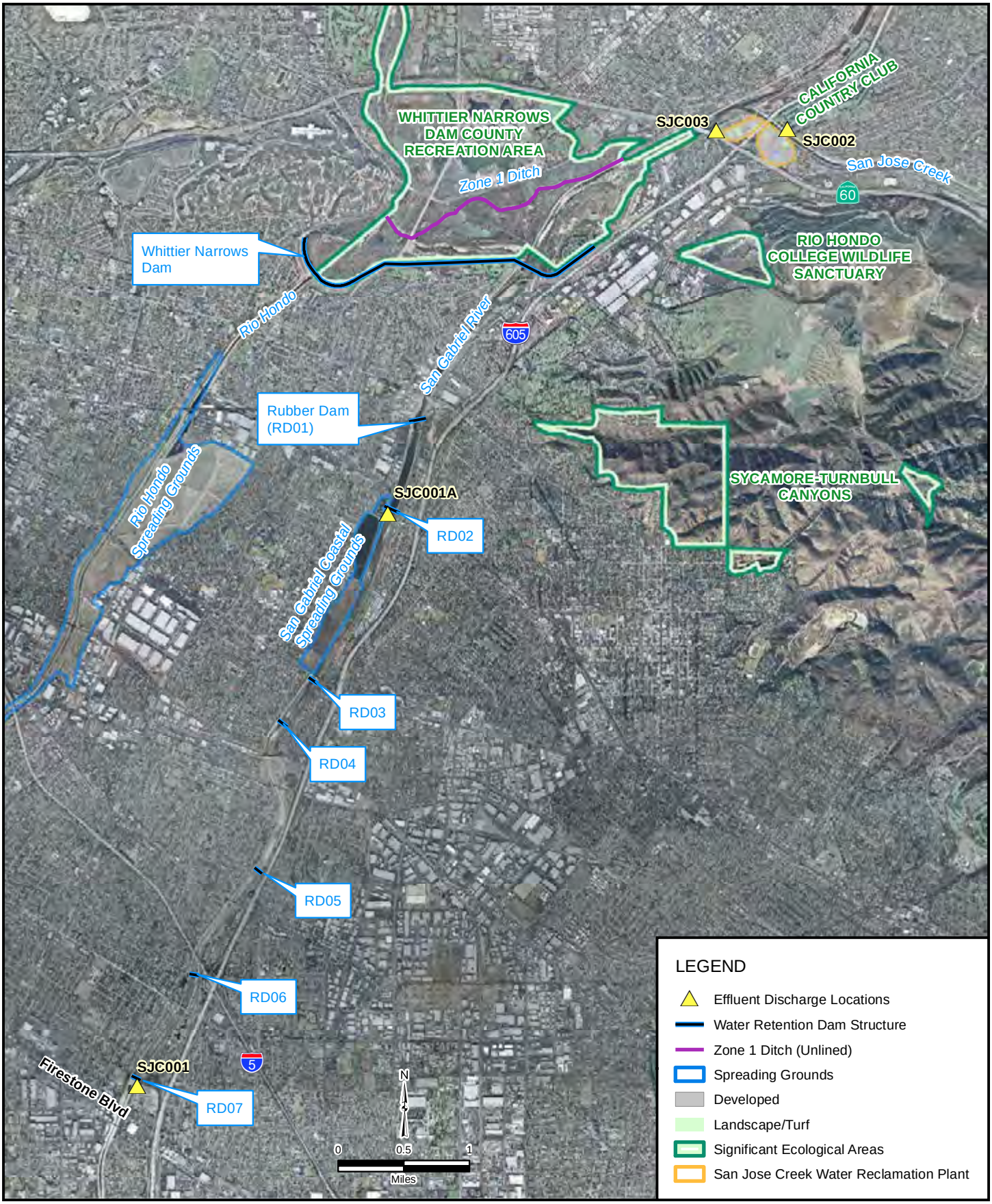


FIGURE 6-3

CLEARWATER Program

Locations of Effluent Discharge at SJCWRP

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

FIGURE 6-4

CLEARWATER Program

Locations of Effluent Discharge at POWRP

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

Based on the USGS San Dimas topographic quadrangle, the San Jose Creek tributary is underground at the POWRP and daylights immediately west of the POWRP as a concrete-lined channel. This channel has some areas with deposited fine sediment and debris, and supports two non-native fish: carp and mosquitofish (*Gambusia affinus*) (DeShazo 2007). The POWRP is located approximately 15 miles upstream of the San Gabriel River and discharges 5 to 12 MGD on an annual average basis to the concrete-lined portion of San Jose Creek.

Los Coyotes Water Reclamation Plant

The Los Coyotes Water Reclamation Plant (LCWRP) is located northwest of the I-605 and SR-91 interchange in the city of Cerritos as shown on Figure 6-5. The San Gabriel River flows within a concrete-lined channel just west of the LCWRP. The LCWRP discharges 25 to 34 MGD on an annual average basis to the river. At the discharge point (LC001), the San Gabriel River provides no aquatic or riparian habitat. West of the San Gabriel River is Ruth R. Caruthers Park. Industrial development occurs to the south of the LCWRP, and residential development occurs to the east. The Iron-Wood Nine Golf Course is adjacent to the LCWRP to the west and north. Within the limits of the LCWRP, the majority of the area is developed and includes some turf grass areas associated with a golf course driving range and ornamental landscaping.

Long Beach Water Reclamation Plant

As shown on Figure 6-6, the Long Beach Water Reclamation Plant (LBWRP) is located just north of the San Gabriel River and Coyote Creek confluence in the city of Long Beach. The El Dorado Golf Course and the San Gabriel River are located to the west of the LBWRP; El Dorado Park is located to the north; Coyote Creek, I-605, and residential development occur to the east; and residential development occurs to the south. The LBWRP discharges 12 to 19 MGD on an annual average basis into the lined portion of Coyote Creek at LB001, located approximately 1,500 feet upstream from the confluence of Coyote Creek and the San Gabriel River. At the discharge point, Coyote Creek provides no aquatic or riparian habitat. Within the limits of the LBWRP, the majority of the area is developed and includes some turf grass areas and ornamental landscaping. The northwest corner of the property contains ruderal vegetation and is connected to an existing debris basin.

Whittier Narrows Water Reclamation Plant

As shown on Figure 6-7, the WNWRP is located within the Whittier Narrows Recreation Area with the Whittier Narrows Dam to the south. The Rio Hondo is located just west of the WNWRP and the San Gabriel River to the southeast. The WNWRP is mostly developed with over one-half the site occupied by nurseries. The remainder of the site is developed with buildings, hardscape, and ornamental planting. The Whittier Narrows Recreation Area is listed as SEA-42 (Los Angeles County Department of Regional Planning 2009). This SEA contains extensive lowland riparian and freshwater marsh habitat supporting a rich and diverse flora and fauna (Los Angeles County Department of Regional Planning 1980).

The WNWRP discharges 5 to 14 MGD on an annual average basis to unlined channels of the Rio Hondo and the San Gabriel River. There are currently three active discharge locations: one at the San Gabriel River (WN001), one at the Rio Hondo (WN004), and one at the Zone 1 Ditch (WN002) (located between the Rio Hondo and San Gabriel River). A fourth location (WN003) is no longer used for discharge and will not be used in the future.

Riparian vegetation occurs within the Rio Hondo from Rush Street, north of SR-60, to the Whittier Narrows Dam. Riparian vegetation also occurs in the Zone 1 Ditch downstream of the discharge location. The quality of the riparian habitat varies from sparse (low) to dense (high). Least Bell's vireo has been identified as occurring in the San Gabriel River and the Rio Hondo during various biological surveys (BonTerra 2003; Aspen 2009; EDAW 2010; BIOS 2010).

FIGURE 6-5

CLEARWATER Program

Locations of Effluent Discharge at LCWRP

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

FIGURE 6-6

CLEARWATER Program

Locations of Effluent Discharge at LBWRP

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011, Los Angeles County DRP 2011

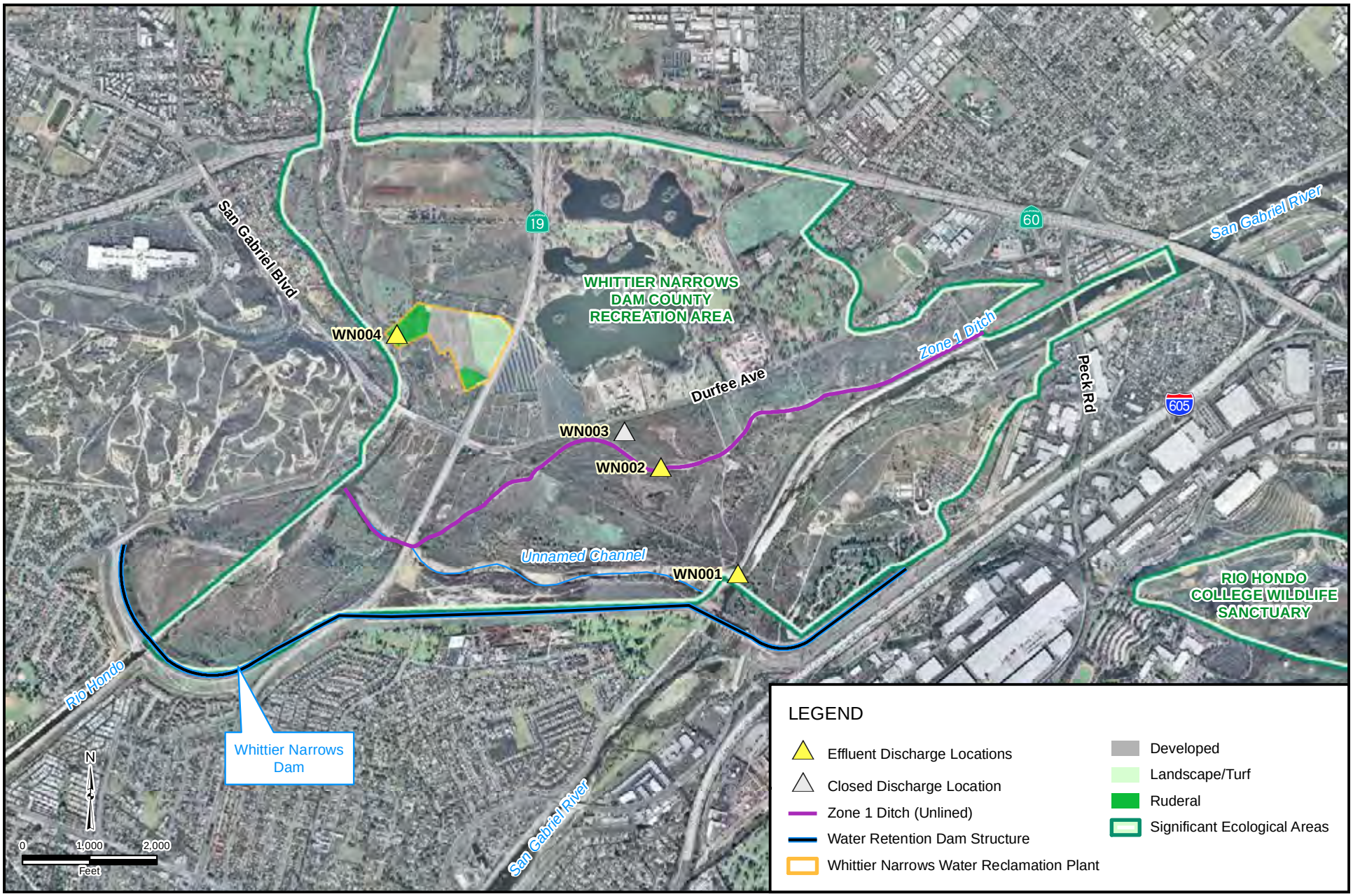


FIGURE 6-7

CLEARWATER Program

Locations of Effluent Discharge at WNWRP

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

The Rio Hondo upstream of the Whittier Narrows Dam supports non-native fish including carp, green sunfish, catfish, mosquitofish, and tilapia (DeShazo 2007).

6.2.2.3 Joint Water Pollution Control Plant

The JWPCP is located in the city of Carson east of I-110, generally between West Sepulveda Boulevard to the north and West Lomita Boulevard to the south (Figure 6-8). The JWPCP is surrounded by residential development. The JWPCP site is mostly developed with treatment facilities. Two undeveloped areas are proposed for shaft sites and are discussed in Section 6.2.3. The Wilmington Athletic Complex, east of Figueroa Street and south of West Lomita Boulevard, comprises turf, ornamental plantings, and ball fields. The Bixby Marshland, located west of Figueroa Street and south of West Sepulveda Boulevard, is a restoration site that provides marsh and sage scrub habitat. Other natural areas in the vicinity include the Wilmington Drain to the west and Machado Lake to the southwest.

6.2.3 Project Setting

Existing conditions with respect to biological resources within each project element are described in the following section.

6.2.3.1 Tunnel Alignment

The onshore tunnel alignments would be constructed well below the ground surface; therefore, terrestrial biological resources would not be affected by the construction and operation of the onshore tunnel alignments. The offshore tunnel alignments are discussed in Chapter 13.

6.2.3.2 Shaft Sites

Shaft sites would be required along each alignment to facilitate tunnel construction as shown on Figure 6-9.

JWPCP East

The footprint for the JWPCP East shaft site (Figure 6-10) is located along the east side of the JWPCP. It is surrounded by the JWPCP to the north and west, residential development to the south, and industrial and residential development to the east. It currently supports ruderal vegetation and developed areas. Based on aerial imagery (Google Earth Pro 2010), the site was completely developed in 1999. Between 1999 and 2002, structures on the site were demolished. By 2003, it appears that ruderal vegetation was beginning to colonize the site. Based on a 2010 site visit, the site is vegetated with early colonizing non-native annuals around the developed areas.

JWPCP West

The footprint for the JWPCP West shaft site (Figure 6-11) is located along the southwest side of the JWPCP. It is bordered to the west by I-110, to the north by the JWPCP, to the east by the Wilmington Athletic Complex, and to the south by residential development. The Wilmington Drain is located approximately 0.2 mile west of the site. The site supports ruderal vegetation and developed areas. Based on aerial imagery (Google Earth 2010), the site was developed in 2004. Between 2004 and 2010, ruderal vegetation increased but the site remains dominated by developed and barren areas. Based on a 2010 field visit, the site supports early colonizing non-native annuals, a row of eucalyptus trees in the center of the site, and a row of ornamental landscaping along the eastern border.

FIGURE 6-8

CLEARWATER Program

Joint Water Pollution Control Plant

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

FIGURE 6-9

CLEARWATER Program

Location of Shaft Sites

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

FIGURE 6-10

CLEARWATER Program

Biological Resources at JWPCP East Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

FIGURE 6-11

CLEARWATER Program

Biological Resources at JWPCP West Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

TraPac

The Trans Pacific Container Service Corporation (TraPac) shaft site (Figure 6-12) is located just north of the Northwest Slip of San Pedro Bay. The site is surrounded by industrial and residential development to the north, east, and west, with Harry Bridges Boulevard immediately to the north. To the south is a truck container storage area. The footprint of the TraPac shaft site is completely developed as a truck container storage area.

LAXT

The Los Angeles Export Terminal (LAXT) shaft site (Figure 6-13) is located on Terminal Island of San Pedro Bay. The site is surrounded on all sides by industrial development associated with the bay. The footprint of the LAXT shaft site is mostly developed and includes some ruderal and landscape vegetation. A row of eucalyptus trees (20 to 30 feet in height) are situated along the west border of the shaft site adjacent to Ferry Street. There is also an area of open water, which appears to have been part of a water treatment process.

Areas adjacent to the site are mostly developed although ruderal vegetation and ornamental landscaping occur to the south. Landscape species that were observed during a field visit in 2010 include ice plant (*Carpobrotus chilensis*), ornamental pines (*Pinus* spp.), eucalyptus (*Eucalyptus* spp.), and blackwood acacia (*Acacia melanoxylon*). A few scattered mule fat (*Baccharis salicifolia*) shrubs were also observed. Large trees (predominantly eucalyptus and pine) are planted along Ferry Street and Terminal Way.

Southwest Marine

The Southwest Marine shaft site (Figure 6-14) is located in the Port of Los Angeles between the Main Channel and Fish Harbor of San Pedro Bay, on a peninsula developed with water-oriented industrial uses. The footprint for the Southwest Marine shaft site is completely developed with concrete, asphalt, and a small storage shed.

Two piers with mechanical cranes are located just west of the site. The Terminal Island Federal Correctional Facility is located south of and adjacent to the site. Across Seaside Avenue to the east of the Southwest Marine shaft site is a boulder breakwater. During a field visit in 2010, approximately 8 to 10 brown pelicans (*Pelecanus occidentalis californicus*) were observed flying over the project area and/or perched on the breakwater. In addition, the nest of an unknown bird species was observed in a light stand at the far end of the breakwater, approximately 900 feet from the shaft site at the closest point. No access was available to this area. The western portion of the breakwater is located, at the closest approach, approximately 400 feet from the shaft site.

In addition to brown pelicans, the only other wildlife species detected were California sea lion (*Zalophus californianus*) (swimming between the piers west of the site) and gulls (*Larus* spp.). The site is located approximately 1.4 miles northwest of a documented least tern (*Sternula antillarum*) breeding colony. Within the Port of Los Angeles, developed areas can provide nesting opportunities for species such as least tern; however, the Southwest Marine shaft site is not known to provide this function. The open water habitat may occasionally provide foraging opportunities for piscivorous birds.

Angels Gate

The Angels Gate shaft site (Figure 6-15) is located within the historic Fort MacArthur Upper Reservation west of the Los Angeles Outer Harbor. The site is surrounded by park uses to the north, south, and west; the San Pedro Channel is located farther to the south and west. To the east is residential development. The Palos Verdes coastline, located west of the site, is designated as an SEA. The majority of the site is covered by an asphalt parking lot. The northern portion of the site is dominated by mowed grasses and other herbaceous species associated with the park. The species found in this turf include non-native

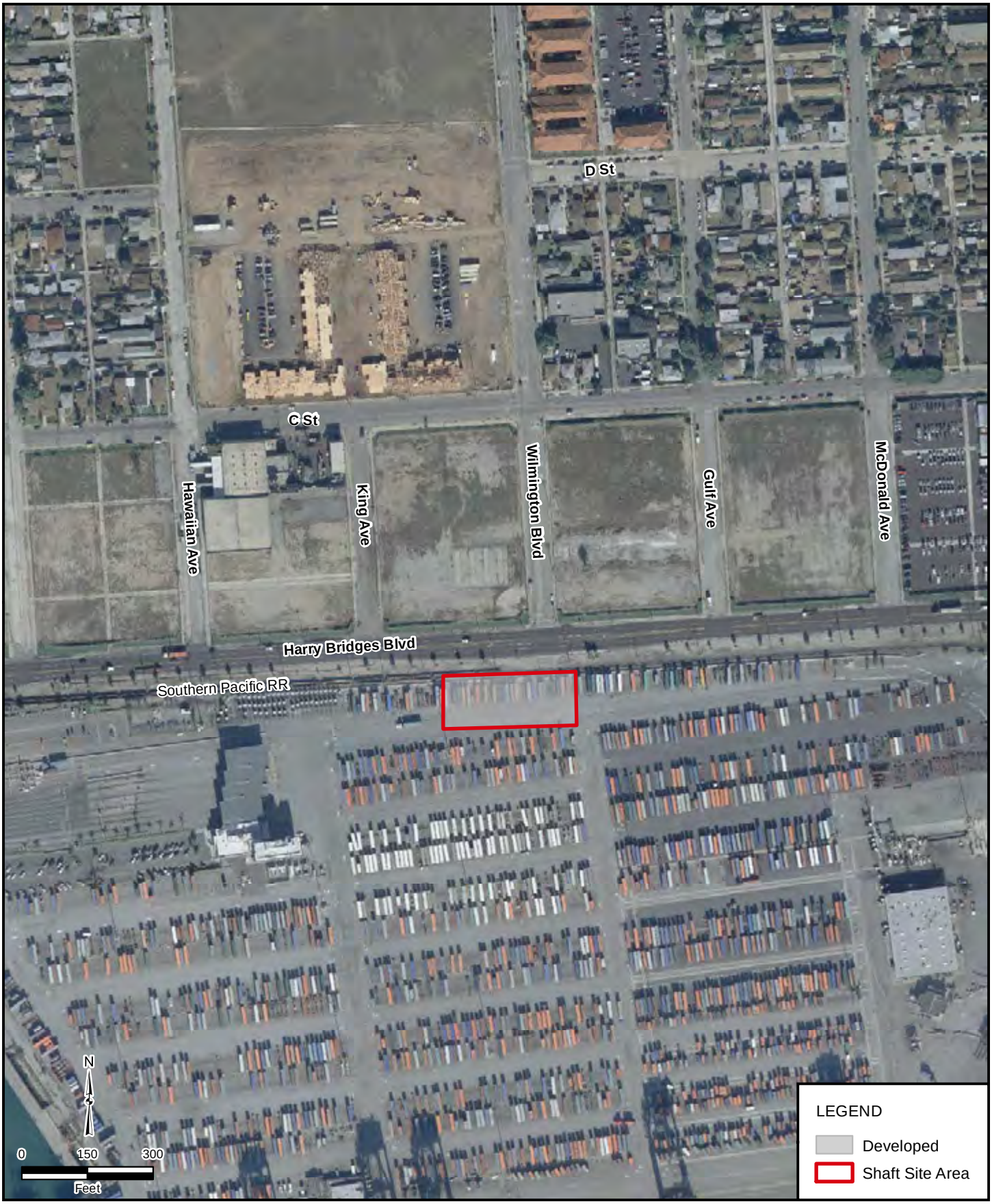


FIGURE 6-12

CLEARWATER Program

Biological Resources at TraPac Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

FIGURE 6-13

CLEARWATER Program

Biological Resources at LAXT Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

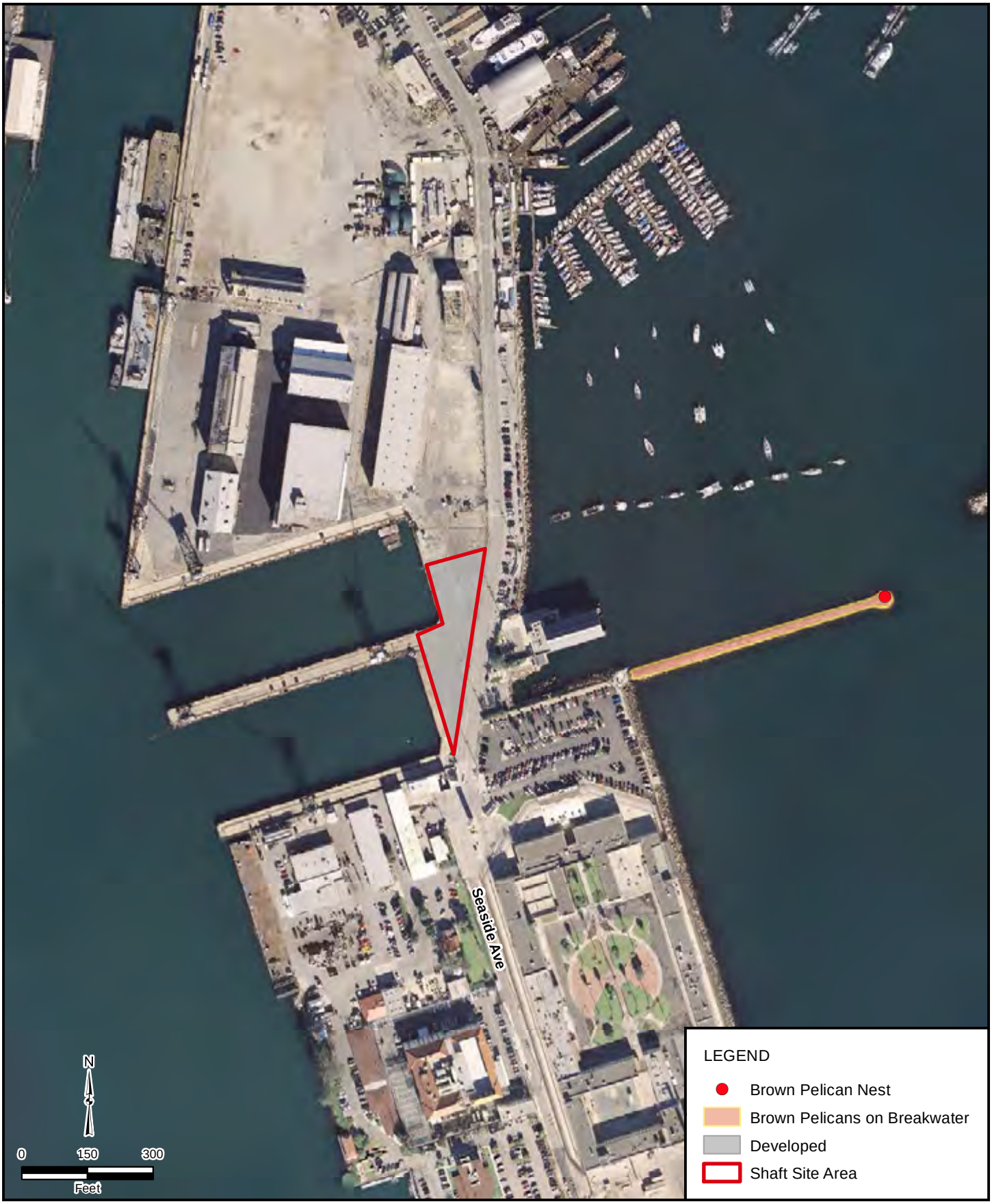


FIGURE 6-14

CLEARWATER Program

Biological Resources at Southwest Marine Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

FIGURE 6-15

CLEARWATER Program

Biological Resources at Angels Gate Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

grasses and ruderal species including black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*), cheeseweed (*Malva parviflora*), London rocket (*Sisymbrium irio*), and ripgut brome (*Bromus diandrus*). A row of palms, both Mexican fan palm (*Washingtonia robusta*) and Canary Island date palm (*Phoenix canariensis*), is planted along Gaffey Street on the eastern edge of the site. Ground squirrels and ground squirrel burrows were found throughout the site and on the northeast side of Paseo Del Mar. The presence of ground squirrel burrows at the site indicates potential habitat for burrowing owls (*Athene cunicularia*), a state species of special concern; however, there are no records of burrowing owls at this site.

Point Fermin Park is adjacent and south of the shaft site, across Paseo Del Mar. The park is completely landscaped with large trees including fig (*Ficus carica*), pine, and eucalyptus. South and west of the landscaped area are a series of cliffs and the open ocean. The cliffs support a known nesting location for American peregrine falcon (*Falco peregrinus*), a state fully protected species and federal species of concern. During a site visit on February 23, 2010, two peregrine falcons were observed south of the site. One was foraging and flying from a point just south of the shaft site to a steep rock-faced cliff near Point Fermin Park. The shaft site is approximately 200 feet east of the northern extent of the cliffs.

Royal Palms

The Royal Palms shaft site (Figure 6-16) is located along Royal Palms Beach just south of the intersection of West Paseo Del Mar and Western Avenue. Surrounding land uses include the ocean to the south, Royal Palms Beach to the east and west, and residential development to the north. The footprint of the site is dominated by non-native grasses and ruderal species, particularly cheeseweed. The site also contains ice plant. The Palos Verdes coastline, located south of the site, supports a diverse biota in a variety of habitats including of marine, shoreline, and coastal scrub communities. For this reason, the coastline and certain buffer areas (including Buffer 34B south of the site) are designated as SEAs. However, the Royal Palms shaft site is not located within the SEA boundaries.

There is a steep slope north of the site, which is mostly bare but does support scattered plants (predominantly non-native grasses and ice plant). Some landscape species also occur on this slope, including Indian fig cactus (*Opuntia ficus indica*), blackwood acacia, Mexican fan palm, and Canary Island date palm. A small area west of the site and most of the area east of the site contain predominantly non-native grasses and other ruderal species, as well as occasional California brittlebush (*Encelia californica*). Numerous fan palms and Canary Island date palms occur west of the site; these trees are cleanly trimmed. This area is mapped as coastal bluff scrub habitat, although unpaved portions of the relatively flat construction footprint support a somewhat different vegetation community. Coastal sage scrub habitat upslope from the construction footprint is a habitat type used by the coastal California gnatcatcher (*Polioptila californica californica*), a federally listed threatened species. This species nests during the spring and early summer (March 1 through July 31) (Atwood and Bontrager 2001). However, the sage scrub habitat in the vicinity of the project is of low quality, is highly fragmented, and is closer to the road than to the construction site. For these reasons, it is unlikely that this area would be occupied by coastal California gnatcatchers.

6.2.3.3 Riser and Diffuser Area

For all biological impacts associated with construction and operation of the riser and diffuser, refer to Chapter 13.

FIGURE 6-16

CLEARWATER Program

Biological Resources at Royal Palms Shaft Site

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007, Los Angeles County DRP 2011

6.3 Regulatory Setting

Regulations that are pertinent to the terrestrial biological resources assessment for the Clearwater Program are discussed in the following section.

6.3.1 Federal

6.3.1.1 Bald and Golden Eagle Protection Act

This act provides for the protection of the bald eagle and the golden eagle (as amended in 1962) by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 United States Code [USC] 668(a); 50 Code of Federal Regulations [CFR] Part 22). "Take" includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb (16 USC 668c; 50 CFR Section 22.3). The U.S. Fish and Wildlife Service (USFWS) has prepared the Bald Eagle Management Guidelines to help landowners, land managers, and others to meet the intent of this act.

6.3.1.2 Clean Water Act

Section 404 of the Clean Water Act (CWA) establishes a permit program administered by the Corps regulating the discharge of dredged or fill material into waters of the United States (including wetlands). Implementation regulations by the Corps are found in 33 CFR Parts 320-330. Guidelines for implementation are referred to as Section 404 (b)(1) Guidelines and were developed by the U.S. Environmental Protection Agency in conjunction with the Corps (40 CFR Parts 230). The guidelines allow the discharge of dredged or fill material into aquatic systems only if there is no practicable alternative that would have less damaging impacts. The Corps, as part of its permitting process under Section 404, would evaluate impacts of project alternatives on terrestrial biological resources including sensitive habitats and threatened and endangered species.

6.3.1.3 Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act regulates the creation of any obstruction, not affirmatively authorized by Congress, to the navigable capacity of any waters of the United States. Section 10 requires a permit from the Corps for the work or structures in, over, or under any navigable water of the United States, including the excavation/dredging or deposition of material in these waters, or any obstruction or alteration in a navigable water. The Corps, as part of its permitting process under Section 10, would evaluate impacts of project alternatives on terrestrial biological resources including sensitive habitats and threatened and endangered species.

6.3.1.4 Coastal Zone Management Act

All federal agencies with activities directly affecting the coastal zone, or with development projects within that zone, must comply with the state coastal acts to ensure that those activities or projects are consistent to the maximum extent practicable. The California Coastal Commission (CCC) reviews development projects for consistency, and may include protective measures as restrictions attached to the coastal zone development permit.

6.3.1.5 Executive Order 11990 – Protection of Wetlands

Executive Order 11990 establishes a national policy to avoid adverse impacts on wetlands whenever there is a practicable alternative. The U.S. Department of Transportation (DOT) promulgated DOT Order 5660.1A in 1978 to comply with this direction. On federally funded projects, impacts on wetlands must be identified in the environmental document. Alternatives that avoid wetlands must be considered. If wetland impacts cannot be avoided, then all practicable measures to minimize harm must be included. This must be documented in a specific Wetlands Only Practicable Alternative Finding in the final environmental document. An additional requirement is to provide early public involvement in projects affecting wetlands.

6.3.1.6 Federal Endangered Species Act

The federal Endangered Species Act (ESA) provides guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. "Take" is defined in Section 3 of the federal ESA as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Section 9 extends the prohibition against take to listed endangered species, and protections are also routinely applied for listed threatened species. Prohibitions on take also apply to adverse habitat modifications that can be clearly linked to effects on the species. Some species have "critical habitat" designated; potential impacts on designated critical habitat must also be addressed.

Section 10 provides mechanisms to permit take by non-federal entities, including habitat conservation plans (HCPs) that may cover a few or many species. Section 7 requires federal agencies in consultation with, and with the assistance of, the Secretary of the Interior to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species.

6.3.1.7 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA), based on a series of treaties between the United States and other countries, makes it unlawful at any time, by any means or in any manner, to take (pursue, hunt, take, capture, possess, transport, sell, or kill) or attempt to take migratory birds. The law does not discriminate between live and dead birds, and extends these same protections to any parts, including feathers, nests, and eggs, of such birds. Nearly all native birds are thus protected. The law applies to the destruction of active nests or eggs, as well as to activities that directly or indirectly cause the abandonment of active nests of covered species. Inactive nests of most, but not all, covered species may be removed. Habitat destruction and degradation that do not result in take, as previously defined, are not prohibited, and a permit process allows for intentional take if human safety or substantial property loss is at immediate risk. Deterring birds from nesting may also be allowed, but once the first egg is laid, it becomes prohibited to interfere with the nesting process. Indirect take, such as accidental destruction of active nests through project construction activities, cannot be allowed under the permit process. Projects that may result in take must apply reasonable measures, such as either avoiding the core nesting season for birds in the region, having a qualified biologist conduct a nesting bird survey and restricting work to when no nesting is present, or establishing sound and visual barriers. In some special or emergency cases, nest relocation may be permitted.

6.3.1.8 Executive Order 13112 – Invasive Species

On February 3, 1999, President Clinton signed Executive Order 13112, which requires federal agencies to combat the introduction or spread of invasive species in the United States. Federal agencies involved in

implementing, funding, or approving projects generally use the state's noxious weed list to define invasive plants that must be considered as part of the National Environmental Policy Act (NEPA) analysis for a proposed project.

6.3.2 State

6.3.2.1 Lake or Streambed Alteration Program

Under Sections 1600 through 1616 of the California Fish and Game Code, project proponents (public or private) are required to notify the CDFG prior to any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, the CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a streambed alteration agreement.

6.3.2.2 California Coastal Act

The California Coastal Act (CCA) of 1976 was enacted to regulate development projects within California's coastal zone. The act includes requirements that protect biological resources through various control measures, which are typically implemented at the local planning level through local coastal programs (LCPs) or land use plans. The CCA protects many biological resources through a broad definition of wetlands as, "…lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, swamps, mudflats, and fens." (Public Resources Code Section 30121.)

For local jurisdictions that do not have an approved LCP, regulation of development projects remains under the jurisdiction of the CCC.

6.3.2.3 California Tidelands Trust Act

Submerged lands and tidelands within the Port of Los Angeles are held in trust by the city of Los Angeles and administered by the Harbor Department to promote and develop commerce, navigation, fisheries, and other uses of statewide interest and benefit, including commercial, industrial, and transportation uses; public buildings and public recreational facilities; wildlife habitat; and open space.

6.3.2.4 California Endangered Species Act

The California ESA establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The California ESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. For projects that affect both a state- and federally listed species, compliance with the federal ESA will satisfy the California ESA if the CDFG determines that the federal incidental take authorization is "consistent" with California ESA under the California Fish and Game Code Section 2080.1. For projects that would result in incidental take of a state-only listed species, the project proponent must apply for a take permit under Section 2081(b).

6.3.2.5 California Fully Protected Species

The state of California first began to designate species as "fully protected" prior to the creation of the California ESA. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction, and included fish, mammals, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the California ESA and/or federal ESA. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code Section 4700) provide that fully protected species may not be taken or possessed at any time. Furthermore, the CDFG prohibits any state agency from issuing incidental take permits for fully protected species, except for necessary scientific research.

6.3.2.6 State Protections for Native Birds

California Fish and Game Code Sections 3503, 3503.5, 3505, 3800, and 3801.6 protect all native birds, birds of prey, and all nongame birds, including their eggs and nests, that are not already listed as fully protected and which occur naturally within the state. The take prohibition is similar to that under the federal MBTA.

6.3.2.7 Native Plant Protection Act

Provisions of the Native Plant Protection Act prohibit the taking of special-status plants from the wild and require notification to the CDFG at least 10 days in advance of any change in land use. This allows the CDFG to salvage listed plant species that would otherwise be destroyed.

6.3.3 Local

6.3.3.1 Los Angeles County Significant Ecological Area

The Los Angeles County General Plan (1980) identifies 62 SEAs as ecologically important land and water systems that are valuable as plant or animal communities. The SEAs are often important to the preservation of threatened or endangered species and to the conservation of biological diversity in the county. Proposed development within an SEA is reviewed by the SEA Technical Advisory Committee, and minutes of the meetings comprise the recommendations of the panel. A conditional use permit is issued containing conditions that are specific to the proposed development in each SEA.

6.3.3.2 Local Tree Protection Ordinances

All applicable local tree protection ordinances can be found in Appendix 6-A.

6.4 Environmental Impacts and Mitigation Measures

6.4.1 Methodology and Assumptions

Environmental impacts on terrestrial biological resources were identified in the Preliminary Screening Analysis based on the biological resources (habitat, plants, and animals) that currently occupy the program and project sites, and the construction and operational actions that would take place under each of the alternatives. Proposed construction footprints, proximity to biological resources, and hydrological conditions under each alternative were evaluated (also see Chapter 11). The biological conditions expected under each alternative are compared to baseline conditions, and any changes in condition were

evaluated using thresholds of significance. Several of the thresholds of significance are based on compliance with existing regulations that have been established to protect biological resources (see Section 6.3).

Assessment of biological impacts at the program level requires an understanding of the current hydrologic regime and its influence on existing biological resources, and how changes in stream flow resulting from effluent management at the WRPs could affect these resources. The following methodology was applied to determine flows within channels receiving discharges from the five WRPs and potential impacts on sensitive biological resources that rely on those flows.

Because the five WRPs can affect resources downstream of the WRP discharge points, the hydrologic analysis focuses on resources in San Jose Creek, the Zone 1 Ditch/Rio Hondo/Whittier Narrows area, and the San Gabriel River from the San Jose Creek confluence downstream to the San Gabriel River Estuary (see Figure 6-1). The analysis reviews flow data from the WRPs, along with instream flow data independently collected at USGS and LACDPW gauge stations, to characterize seasonal variations in flow and the potential of WRP discharges to affect those flows. The analysis then examines how WRP discharges affect biological resources. The reference point for WRP discharges and biological resource conditions is the baseline year of 2008, and is considered representative of the discharges from each WRP. Monthly precipitation was generally below average during the dry-season months (May to October) at southwestern California stations during 2008 (NOAA 2009), making the baseline an appropriate year to determine if WRP flows are a substantial contributor to aquatic habitat conditions. Each WRP may discharge to a stream or to a recycled water system; if discharging to a stream, some WRPs (SJCWRP and WNWRP) have several discharge points, while the others (POWRP, LCWRP, and LBWRP) have a single discharge point.

The analysis for determining significance of changes to instream flow resulting from effluent management on biological resources is described in detail under Impact BIO-1 and is referenced under subsequent relevant impact discussions.

It should be noted that an action may have direct and indirect physical effects on biological resources. With regard to biological impact thresholds, a direct impact would include physical harm to a sensitive resource, whereas an indirect impact would include a modification to habitat or other features that a species relies upon. These direct and indirect impacts (which are in reference to biological resource impacts) differ from those identified and defined by the Corps in Section 3.5.2 (which are in reference to federal regulations and responsibilities). The differing California Environmental Quality Act (CEQA) and NEPA baselines are defined in the following section, as they relate to biological resources.

6.4.1.1 Baseline

CEQA Baseline

The CEQA baseline for the Clearwater Program is described in Section 1.7.4.1. With regard to biological resources, the baseline for analysis under CEQA refers to the physical site conditions, vegetation cover, and wildlife use at the time that the notice of preparation (NOP) was issued, which was 2008. A description of the physical environmental conditions in the JOS that existed at the time of the NOP is presented in Section 2.2.4.

NEPA No-Federal-Action Baseline

The NEPA baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline is not bound to a “no growth” scenario. The NEPA baseline differs from the CEQA baseline because unlike CEQA, which refers to a point in time, the NEPA baseline refers to the full range of construction and

operational activities that the Sanitation Districts would implement, and is likely to implement, absent a Corps permit under Section 10 of the Rivers and Harbors Act, Section 404 of the CWA, and Section 103 of the Marine Protection, Research, and Sanctuaries Act. Specifically, the NEPA baseline with regard to biological resources is the physical condition of the site, vegetation, and wildlife that reasonably would be expected over the lifetime of the project in the absence of federal action (e.g., federal funding and permitting actions).

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located outside the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

6.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for terrestrial biological resources (BIO):

BIO-1. Results in direct or indirect impacts on riparian habitats, special-status vegetation communities, or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFG or USFWS.

BIO-2. Results in direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species.

BIO-3. Results in direct or indirect take of a state-listed, threatened, or endangered plant or wildlife species.

BIO-4. Results in direct or indirect impacts on designated critical habitat for any state- or federally listed threatened or endangered plant or wildlife species.

BIO-5. Results in direct or indirect impacts on any CDFG wildlife species of special concern.

BIO-6. Results in direct or indirect impacts on any rare, endemic, or regionally sensitive plants on California Native Plant Society Lists 1 or 2.

BIO-7. Results in direct or indirect impacts on any HCPs, natural community conservation plan, or other approved local, regional, or state HCPs.

BIO-8. Results in direct or indirect impacts on wetlands, waters, or special aquatic habitats regulated by the Corps, CDFG, CCC, Regional Water Quality Control Board (RWQCB), or the County of Los Angeles.

BIO-9. Directly or indirectly interferes with the movement of any freshwater fish or terrestrial wildlife species through impacts on or reduction in quality of a documented wildlife corridor or habitat linkage.

BIO-10. Conflicts with any other federal, state, or local policies or ordinances protecting biological resources.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on terrestrial biological resources before mitigation. Table 6-4 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 6-4 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal-Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 6-4. Thresholds Evaluated

		Threshold									
	Alt.	BIO-1	BIO-2	BIO-3	BIO-4	BIO-5	BIO-6	BIO-7	BIO-8	BIO-9	BIO-10
Program Element											
Conveyance System Improvements	1–5										X
SJCWRP Plant Expansion	1–5		X	X		X					X
SJCWRP Process Optimization	1–4		X	X		X					X
SJCWRP Effluent Management	1–5	X	X	X		X			X	X	
POWRP Process Optimization	1–4										X
POWRP Effluent Management	1–5	X	X	X		X			X	X	
LBWRP Process Optimization	1–4										X
WNWRP Effluent Management	1–5	X	X	X		X			X	X	X
JWPCP Solids Processing	1–5					X					
Project Element											
JWPCP East Shaft Site	1,2										X
LAXT Shaft Site	1,2										X
JWPCP West Shaft Site	3,4										X
Angels Gate Shaft Site	3					X					X
Royal Palms Shaft Site	4		X								X

Alt. = alternative

For a detailed discussion of impacts associated with marine biological resources resulting from the construction of the offshore tunnel, construction and operation of the riser and diffuser, and rehabilitation and maintenance of the existing ocean outfalls, refer to Chapter 13.

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears.

6.4.3 Alternative 1

6.4.3.1 Program

Impact BIO-1. Would Alternative 1 (Program) result in direct or indirect impacts on riparian habitats or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFG or USFWS?

WRP Flow Analysis

Tertiary-treated effluent from the SJCWRP and WNWRP is discharged to open channels that support riparian habitat used by a federally and state-listed species. The POWRP discharges tertiary-treated effluent to a concrete-lined channel that flows to an unlined channel segment several miles downstream where it, along with groundwater upwelling and urban stormwater runoff, also supports riparian habitat used by federally and state-listed species. In addition, effluent flow has the potential to affect other biological resources. Because habitat and species are interconnected, this analysis pertains to all relevant biological effects of WRP flow; therefore, subsequent impact discussions will refer back to this WRP flow analysis as needed to determine significance.

The locations of all discharge points discussed in the analysis that follows are mapped on Figure 6-2.

Pomona Water Reclamation Plant

The POWRP discharges to the South Fork of San Jose Creek. During the baseline year, 2008, discharges showed a day-to-day variation of 2 to 4 MGD. Monthly average discharges varied from a winter peak of 6 to 7 MGD from December to February, to a summer low of 2 to 3 MGD from June to October.

There are no flow data for the South Fork of San Jose Creek but routine observations by Sanitation Districts' staff indicate that dry weather flow in the absence of POWRP discharges is negligible (less than 1 MGD). This creek section is a lined channel and presumably there is little flow loss during its course to the San Jose Creek main stem. The South Fork joins the much larger main stem approximately 3 miles below the POWRP discharge and 13 miles above the confluence with the San Gabriel River. The main stem San Jose Creek is also lined until about 1 mile above the confluence with the San Gabriel River. Groundwater upwelling has been observed at perforations in the concrete lining of San Jose Creek. The Sanitation Districts collected flow measurements in the lined portion of the creek on 9 days in 2007 and 2008 when there was no discharge from the POWRP or precipitation for 48 hours or more prior to the measurement. On each day, a measurement at station Pomona RC, located 1.2 miles below the confluence of the South Fork and San Jose Creek, was paired with a measurement at station Pomona RD, located near the downstream end of the lined segment of San Jose Creek (Figure 6-2). Those measurements indicate that groundwater upwelling and dry weather urban runoff contribute between 7 and 13 MGD between these two stations (Figure 6-17), a flow volume three to six times greater than dry season POWRP discharges. Monthly average flows in San Jose Creek during 2008 ranged from a low of 18.7 MGD in January to a high of 38.9 MGD in May (LADPW 2008, 2009). These data thus indicate that the POWRP contributes a fraction of dry season flow in the unlined channel of San Jose Creek at its confluence with the San Gabriel River.

San Jose Creek Water Reclamation Plant

There are four discharges from the SJCWRP listed here in order from upstream to downstream (shown on Figures 6-2 and 6-3):

- SJC002 discharges to the unlined segment of San Jose Creek just upstream of its confluence with the San Gabriel River.

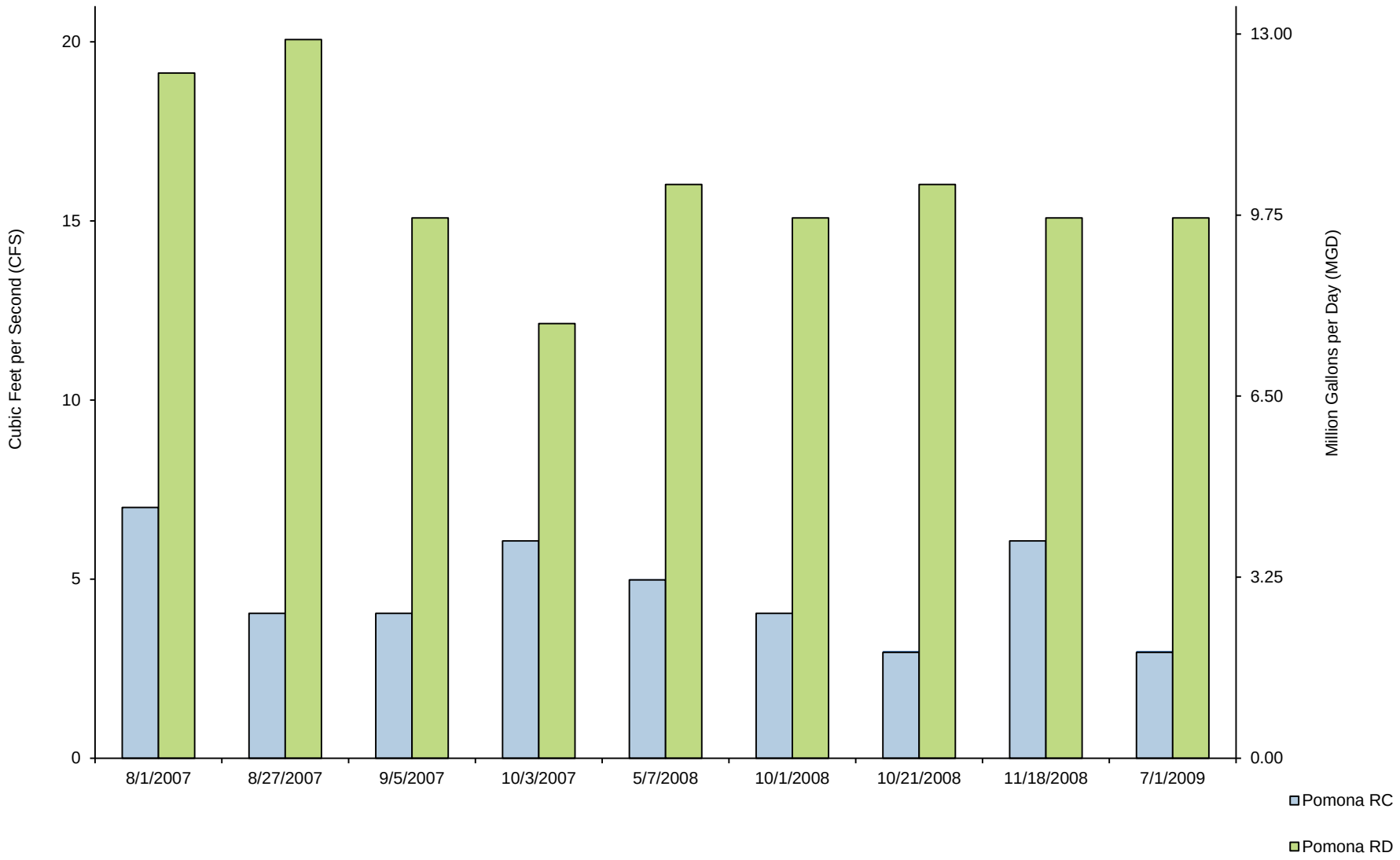


FIGURE 6-17

Measured San Jose Creek Flow When POWRP Discharge is Zero

Source: Sanitation Districts of Los Angeles County 2011

- SJC003 discharges to the unlined segment of the San Gabriel River just below its confluence with San Jose Creek.
- SJC001A discharges to the unlined San Gabriel River about 4 miles downstream of the SJCWRP, near the San Gabriel Coastal Spreading Grounds.
- SJC001 discharges to the lined San Gabriel River about 9 miles downstream of the SJCWRP, at the beginning of the lined channel approximately 1,000 feet upstream of Firestone Boulevard.

The SJC002 discharge is just below the USGS San Jose Creek gauge station. During 2008, daily discharges from January through May at SJC002 gradually declined from 35 to 23 MGD. Discharges dropped to about 12 MGD for most of June; recovered to an average 26 MGD in July; virtually stopped during August, September, and October; and resumed at about 10 to 15 MGD in November and December. During the times discharges were occurring, there were generally little day-to-day variations in flows. For the year as a whole, discharges averaged 18.7 MGD. Given the estimate of dry-season natural flows amounting to 7 to 13 MGD before accounting for recharge losses, it is likely that when SJC002 was active between May 1 and August 10, it accounted for about one-half of the total flow in San Jose Creek. Because SJC002 is only about 0.5 mile upstream of the confluence with the San Gabriel River, this discharge would also have had a substantial effect on flows in the river.

Flows in the San Gabriel River have been estimated at USGS gauge stations both upstream and downstream of the SJC002 and SJC003 discharges. The gauge station at Santa Fe Dam (USGS11085000) is located 6.4 miles upstream. Most of this segment is unlined and, although one major tributary channel (Walnut Creek) contributes flow, inspection of aerial photographs suggests that the segment is generally dry; it supports very little vegetation, and the gauge station at Santa Fe Dam usually records flow only in conjunction with major precipitation events or releases from upstream dams. It thus appears that dry-season flow in the San Gabriel River below San Jose Creek consists of WRP discharges and the 7 to 13 MGD natural flow contribution from San Jose Creek.

This inference can be verified because a USGS gauge station for the San Gabriel River above Whittier Narrows (USGS11087020) is located only 0.4 mile (unlined channel) downstream of the SJC003 discharge. The 2008 discharge and gauge records are shown on Figure 6-18. Except for two periods (late May to early June and late July to early August), these records match each other very closely. There are a number of upstream activities to explain these anomalies. The Santa Fe Dam gauge (USGS11085000) record shows that the late July to early August period was a time of high flow releases at Santa Fe Dam, with releases of 100 to 500 cubic feet per second (60 to 330 MGD) every day from July 8 to August 11. The May to June anomaly remains unexplained, but may have been due to a high flow event on Walnut Creek, a major tributary that enters the San Gabriel River below Santa Fe Dam. There were no imported water deliveries to this location during this time. For the remainder of the record, there is a close correspondence between WRP discharges and San Gabriel River flows. In May, river flows are slightly higher than WRP discharges, suggesting that natural instream flows are greater than incidental recharge of water in the unlined areas of San Jose Creek and the San Gabriel River upstream of the gauge station. From mid-August through October, WRP discharges are slightly higher than gauged river flows, suggesting that infiltration of WRP discharges is occurring in the unlined segments of San Jose Creek and the San Gabriel River located upstream of the gauge station. When discharges stopped for 3 days in August 2008, flows dropped to zero at the gauge station. These records show that at times WRP discharges are the principal source of flow for this portion of the San Gabriel River.

The discharge at SJC001 is located 3.5 miles downstream from the San Gabriel Coastal Spreading Grounds. If flows are fully infiltrated at the spreading grounds and in the river, then this discharge likely accounts for a large portion of the dry-season flow of the San Gabriel River at this point and, as there are

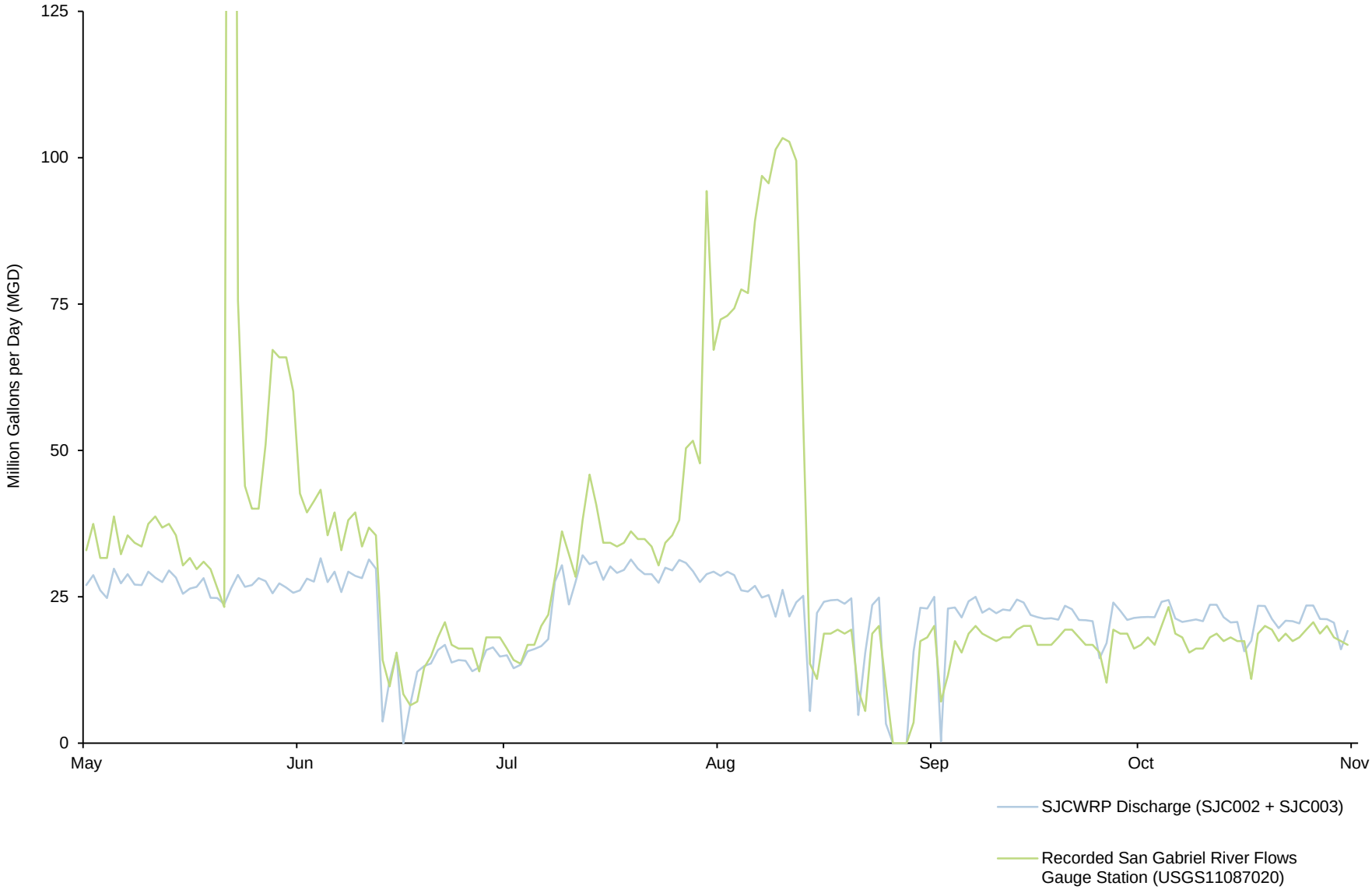


FIGURE 6-18

CLEARWATER Program

Comparison of SJCWRP Discharges and Gauge Station Flows for the San Gabriel River in 2008

Source: Sanitation Districts of Los Angeles County 2011

no significant tributaries downstream until Coyote Creek at the LBWRP, it also accounts for most of the downstream channel flow (apart from the contributions by LCWRP and LBWRP, discussed later). In 2008, SJC001 discharges were never less than 25 MGD and mostly fluctuated between 30 and 50 MGD except for an extended period of 50 to 60 MGD discharges in November and December. Discharges for the May to October dry season averaged 39.4 MGD. These levels of discharge, however, are a historic anomaly, as there were no direct deliveries from the SJCWRP discharge to the San Gabriel Coastal Spreading Grounds during this period. When these direct deliveries to the San Gabriel Coastal Spreading Grounds through the discharge point resumed the following year, the average dry season discharge was 21 MGD, slightly less than the annual average of 24 MGD.

The SJCWRP discharges are also important during the wet season. In 2008, these discharges amounted to less than 10 percent of San Gabriel River flow on only 19 days, all of which were associated with major rainfall events. On every other day of the year, WRP discharges amounted to more than 20 percent of gauged flow, and for about 290 days, they amounted to more than 50 percent of gauged flow. However, it should also be noted that in February 2010, flows within San Jose Creek and the San Gabriel River were observed without discharge from the POWRP or SJCWRP, and with no contribution from upstream sources within the San Gabriel River. It was evident that this flow regime (supplied via groundwater upwelling in lined and unlined portions of San Jose Creek) resulted in water over-spilling each of the series of grade-control weirs in the unlined San Gabriel River channel, indicating that the amount of water flowing without contribution from POWRP or SJCWRP discharge is adequate to maintain flows over the weirs, at least at certain times of the year.

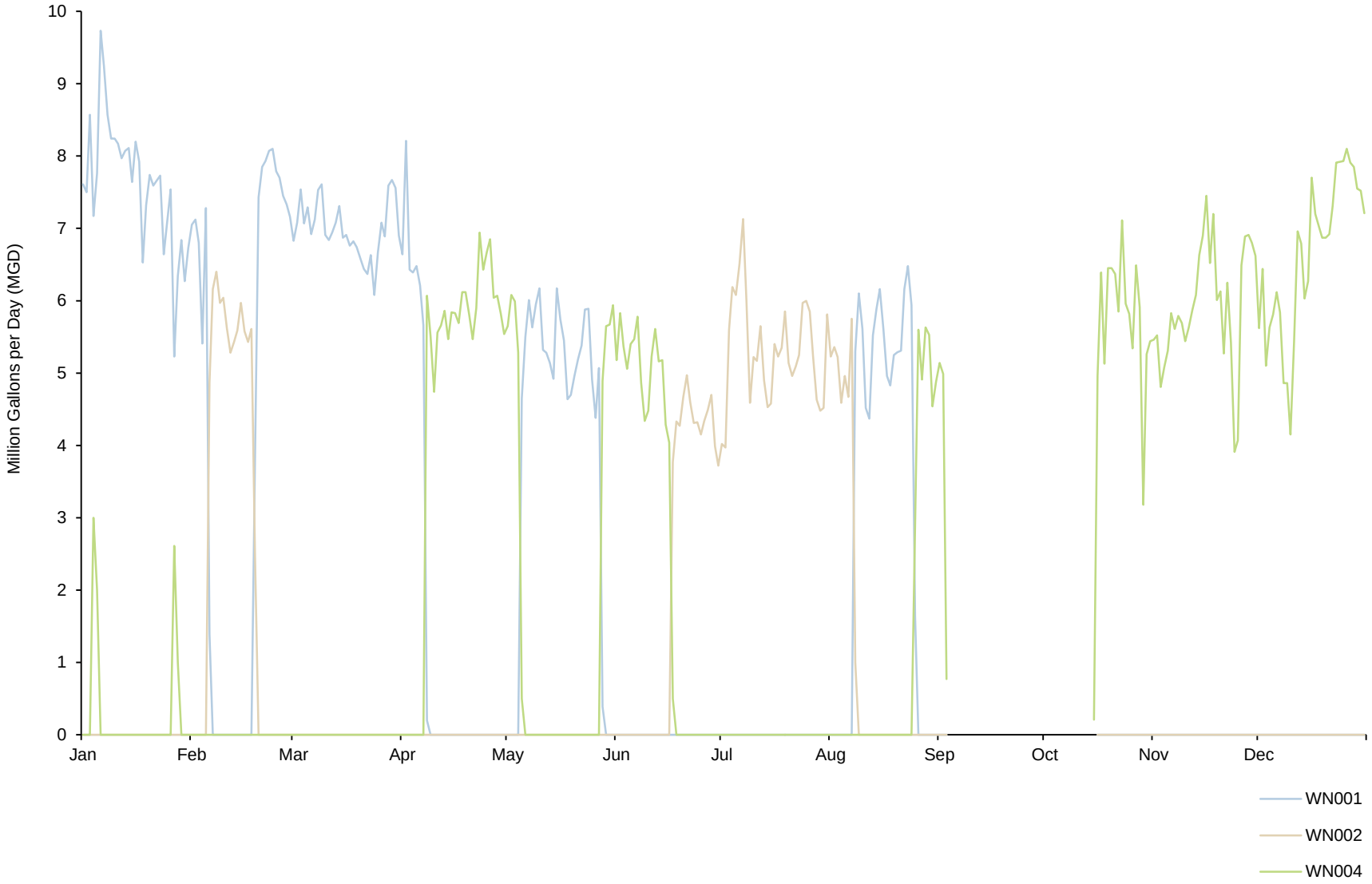
Whittier Narrows Water Reclamation Plant

There are three discharges from the WNWRP:

- WN001 discharges to the San Gabriel River at the end of Siphon Road, just a few hundred feet upstream of the Whittier Narrows Dam.
- WN002 discharges to the Zone 1 Ditch about midway in its course between the San Gabriel River and the Rio Hondo. These flows are channeled to the Rio Hondo.
- WN004 discharges to the Rio Hondo next to the WNWRP, about 0.5 mile upstream of the confluence of the Rio Hondo and the Zone 1 Ditch.

Thus, WN001 discharges to the San Gabriel River and contributes to the WRP-derived flows in the river, while WN002 and WN004 contribute to flows in the Zone 1 Ditch and the Rio Hondo, respectively. As shown on Figure 6-19, the pattern of operations at the WNWRP involves using only one of these discharges at any given time, usually for a period of several weeks to several months, and then shifting to another discharge point. The annual average discharge from the WNWRP is 6 MGD, with a dry-season discharge of about 5 MGD.

The only USGS gauge station that can assist in understanding the potential hydrologic implications of discharges from the WNWRP is the station on the Rio Hondo above Whittier Narrows, which has records from 1956 to the present. Records for that station in 2008 indicate that flows exceeded 20 MGD and were clearly associated with major precipitation events on 36 days, or 10 percent of the time. When discharges occurred during these high flows, they represented between 1 and 23 percent of natural flows as measured at the gauge station. On another 43 days, or 12 percent of the time, stream flows were between 4.5 and 19 MGD, and on days when discharges occurred, the discharge flows represented between 29 and 138 percent of natural flows as measured at the gauge station. On all remaining days, amounting to 78 percent of the year, gauged stream flows were less than 4.5 MGD, and discharges generally exceeded



NOTE: No WNWRP Discharge from September 4 - October 12, 2008

FIGURE 6-19

CLEARWATER Program

Discharges from WNWRP in 2008

Source: Sanitation Districts of Los Angeles County 2011

natural flows by more than 1000 percent. It is thus generally true that when the WNWRP is discharging to the Rio Hondo, it represents by far the predominant source of flow in the river.

Discharges from the WNWRP are greatly dependent upon flood control maintenance and other activities outside of the Sanitation Districts' control. For example, in recent years, discharges to the Rio Hondo channel were interrupted for long periods of time due to reconstruction of a railroad bridge over the river as the levees were being raised as a part of the Los Angeles County Drainage Area improvement program, and for the reconstruction of the Beverly Boulevard bridge, which was severely damaged by fire. Discharges to the Zone 1 Ditch have been interrupted due to sediment deposition that covered the opening into that waterway, and by the re-armoring and burial of a sewer line near the Rio Hondo that had been exposed by heavy storm flows. In 2008, the WNWRP went through plant upgrades resulting in the plant being offline and not discharging to any water body in September and October. Additionally, annual river bottom cleanouts at various points downstream of the WNWRP discharge by the LACDPW and management and maintenance of the spreading grounds by the LACDPW in coordination with the Water Replenishment District of Southern California routinely require the diversion of discharges away from the areas being cleared. Because of these types of constraints, the Sanitation Districts are not able to regularly discharge to any particular discharge point, and historical flows as well as future releases to any particular discharge point have and may be interrupted for an extended period of time.

Los Coyotes Water Reclamation Plant

Based on the prior analysis, discharges from the SJCWRP at SJC001 are generally a significant fraction of the dry-season source of flow in the San Gabriel River just upstream of the LCWRP, except during relatively brief periods following major precipitation events. A comparison of monthly average discharges from SJC001 and the LCWRP at LC001 and flows in the San Gabriel River for the baseline year of 2008 is provided in Table 6-5.

Table 6-5. 2008 Mean Monthly Discharges From SJC001 and LC001 and San Gabriel River Flows

Month	SJC001 (MGD)	LC001 (MGD)	San Gabriel River Above Spring Street[a]
Jan	40	29	153
Feb	39	27	143
Mar	36	25	130
Apr	33	26	126
May	34	24	108
Jun	41	24	132
Jul	37	23	106
Aug	40	19	125
Sep	43	19	139
Oct	42	25	137
Nov	49	26	127
Dec	56	27	215
Annual	41	25	136

[a] Additional flows at the station above Spring Street include precipitation runoff and upwelling upstream of this station.
Source: LACDPW 2008, 2009

As shown in Table 6-5, the combined annual discharge of SJC001 and LC001 averages 49 percent of San Gabriel River flows downstream of the LCWRP.

Long Beach Water Reclamation Plant

The LBWRP discharges to Coyote Creek at LB001 immediately upstream of its confluence with the San Gabriel River. Both channels are fully lined for many miles both up and downstream. During 2008, discharges showed a day-to-day variation of 2 to 4 MGD. Monthly average discharges varied from a July minimum of 8.2 MGD to a December maximum of 17.2 MGD.

The LACDPW monitors flow in Coyote Creek approximately 1 mile upstream of LB001 (Station F354 [LACDPW 2008, 2009]). Mean daily flow data in Coyote Creek from 2008 range from 0.8 to about 1,600 MGD. Excluding storm events, the mean daily discharge ranged from 0.8 to 69.8 MGD with a median flow of about 13.6 MGD. The median dry weather discharge was only slightly less (13.1 MGD) during the May to October dry season. Even during the dry season, flows in Coyote Creek were highly variable, indicating a lack of flow buffering that is typical of urbanized watersheds.

During the 2008 May to October dry season, the LBWRP contributed between 7 and 91 percent of the Coyote Creek flow. The median contribution of the LBWRP to the 2008 dry weather Coyote Creek flow was about 43 percent.

In 2008, the median daily discharge of the WRP effluents (POWRP, SJCWRP, WNWRP, LCWRP, and LBWRP) equaled 81 percent of the San Gabriel flow below Coyote Creek. Daily discharges varied between 16 and 263 percent of the flow in the San Gabriel River below Coyote Creek indicating that at times the quantity infiltrating to groundwater in unlined segments or to spreading grounds exceeded the flow reaching the lower San Gabriel River. In 2008, this occurred on 38 separate days.

Conclusions of Flow Analysis

Flow predictions based on WRP discharge volumes can be compared to independent USGS flow data for SJCWRP discharges to the San Gabriel River during 2008. Those data indicate consistency between these two independent data sources.

For less than 30 days per year, flow in stream channels within the study area is dominated by runoff from recent storm events. At these times, the fraction of flow contributed by WRP discharges varies from less than 1 percent up to about 50 percent. For the remainder of the year, flow is dominated by WRP effluent discharges, with important secondary contributions from urban runoff, groundwater upwelling, releases from upstream reservoirs, and intermittent imported water deliveries. For the May to October dry season, WRP discharges usually constitute the principal source of flow in the Rio Hondo and Zone 1 Ditch, and the greatest sources of flow for San Jose Creek below SJC002. It follows that for most of the year, the volume of flow in these waters is predominately influenced by WRP discharges.

Biological Effects of Water Reclamation Plant Effluent Management

This analysis evaluates the biological effects of WRP discharges to the six stream segments receiving those flows (see Figure 6-2):

- Segment 1: The concrete-lined segment of San Jose Creek extending from the POWRP discharge to approximately 1 mile upstream of the confluence with the San Gabriel River.
- Segment 2: The unlined portion of San Jose Creek and the contiguous unlined portion of the San Gabriel River extending from the San Jose Creek confluence downstream to the San Gabriel Coastal Spreading Grounds.
- Segment 3: The Zone 1 Ditch, including both lined and unlined portions.
- Segment 4: The Rio Hondo extending from the WNWRP discharge point downstream to the Whittier Narrows Dam.

- Segment 5: The Rio Hondo extending from the Whittier Narrows Dam to the Rio Hondo Spreading Grounds.
- Segment 6: The San Gabriel River extending from the San Gabriel Coastal Spreading Grounds to the river's mouth at Seal Beach.

Segment 1: San Jose Creek

No sensitive biological resources are known to occur in the lined segment of San Jose Creek. This segment of the creek is perennial and supports non-native fish (carp, mosquitofish, and tilapia) (DeShazo 2007; Aquatic Bioassay & Consulting Laboratories 2008) and may support other aquatic animals. During the baseline year of 2008, the POWRP discharge constituted at least 50 percent of flows in this segment of the creek on 9 days in May to June, and 5 days in November to December. This discharge likely has a beneficial effect on aquatic life in the creek, especially during the drier months of the year, but because of the perennial natural flows and the near-absence of biological resources, POWRP discharges likely have little effect on biological resources in this lined segment of San Jose Creek. Based on flow measurements taken in the lower portion of San Jose Creek by the LACDPW (2008, 2009), the monthly average contribution of the POWRP discharge to the total San Jose Creek flow in 2008 ranged from 19 percent in January to 39 percent in May.

Segment 2: San Jose Creek – San Gabriel River

A variety of sensitive biological resources occur within Segment 2, an unlined portion of San Jose Creek and the San Gabriel River. These resources include:

- Riparian habitats, all of which are considered to be sensitive natural communities by the CDFG.
- Riparian vegetation that provides nesting habitat for the least Bell's vireo, a federally and state-listed endangered species. It also provides suitable habitat for yellow warbler and yellow-breasted chat, two songbirds listed by the CDFG as species of special concern.
- Ponded waters that may provide suitable habitat for the western pond turtle, listed by the CDFG as a species of special concern.
- The area constitutes a linkage in regional habitat; many species that move between areas within this urbanized region rely on areas such as this habitat patch to provide refuge and forage during their migratory movements. A reduction in the extent of riparian habitat would have the potential to affect the quality of linkages between upstream and downstream habitats.

As described in the preceding flow analysis, POWRP discharges contribute from approximately one-sixth to one-third of the total flow in the San Jose Creek portion of this channel segment. Additional discharges from the SJCWRP raise this number to the point at which WRP discharges constitute over one-half of total San Gabriel River flow for approximately 290 days a year. The WNWRP sometimes discharges to this segment as well. Although the WNWRP discharge is downstream of most riparian and aquatic habitat in Segment 2, it potentially benefits riparian habitat for about 1 mile downstream of the Whittier Narrows Dam.

As shown on Figure 6-18, during the dry season, most of the San Gabriel River flow consists of WRP effluent; therefore, WRP discharges may support riparian habitat and the wildlife uses that depend upon it. During the dry season, major reductions in discharges from the POWRP and from the two upstream SJCWRP discharges could potentially result in a measurable decline in stream flow, and thus in the abundance or vigor of riparian vegetation. A prolonged stream flow reduction, which might occur as a result of a prolonged cessation of WRP discharges (for instance if no discharges occurred during one year's dry season), could result in the loss of a fraction of riparian vegetation in this area, with recovery

taking several years of normal flows. Such a prolonged event could also result in decline or extirpation of local populations of special-status species, such as least Bell's vireo and western pond turtle (if present). However, it is not clear that reduction or cessation of WRP discharges would necessarily result in a substantial reduction in stream flow because base flows in San Jose Creek (derived from urban runoff and upwelling groundwater) have been observed to overflow each of the series of grade-control weirs on the San Gabriel River even when no WRP discharge is occurring. If dry-season flows are sufficient to overtop the weirs, which has been observed, no wetted width reductions or subsequent reductions in the quality of the riparian vegetation due to desiccation would be expected within the approximately 5,400-foot-long portion of the San Gabriel River between San Jose Creek and the last grade-control weir above the Whittier Narrows Dam. Flows sufficient to overtop these weirs should maintain the wetted width of this habitat and constitutes the relevant measure for potential harm to aquatic and riparian habitat. Flows that maintain the wetted width of this channel segment would likely maintain current habitat conditions.

Segments 3 and 4: Channels Upstream of the Whittier Narrows Dam

Biological resources occur in channels fed partially by WRP discharges in two areas above the Whittier Narrows Dam. These channels are the Zone 1 Ditch (Segment 3) and the Rio Hondo between the WNWRP and the Whittier Narrows Dam (Segment 4). Surface flows in this area are derived from the WNWRP and include its discharges to the Rio Hondo and to the Zone 1 Ditch, as well as San Gabriel River flow that is intermittently routed through the Zone 1 Ditch, which may include SJCWRP and, to a lesser extent, POWRP flows. Sensitive biological resources in this area are the same as identified for Segment 2, and in addition, the area includes the Whittier Narrows Recreation Area, which has been designated as SEA-42 by Los Angeles County. One exception is the upstream 0.8 mile of the Zone 1 Ditch, which is lined and does not support riparian vegetation.

As noted in the preceding analysis of WNWRP discharges, those discharges are the most significant quantified sources of flow in the Rio Hondo and the Zone 1 Ditch. However, due to the regular rerouting of flows between the various WNWRP discharge points, the WNWRP flows themselves are highly intermittent for any given area, so at various points in time, there is no flow to each location for extended time periods. The amount of discharge necessary to maintain current habitat conditions is not clear.

WNWRP discharges during the baseline year of 2008 are shown on Figure 6-19. Discharges from WN001 enter the San Gabriel River and did not benefit biological resources in Segments 3 or 4, although they did likely benefit biological resources in Segment 2, as discussed earlier. Discharges from WN002 and WN004 went to the Zone 1 Ditch and the Rio Hondo, respectively, and did benefit biological resources in Segments 3 and 4 and downstream from those segments.

In the baseline year, the Rio Hondo received discharges during much of April through August, and from mid-October until the end of the year. The April through August discharges would have been available to support riparian vegetation and aquatic habitat. In most of September and half of October, however, the WNWRP was not discharging, and no WRP flow would have been available to maintain aquatic and riparian habitat in the Zone 1 Ditch and Rio Hondo channels.

The Zone 1 Ditch received discharges briefly in February, and then from mid-June into early August. These latter discharges coincided with a substantial portion of the dry season and likely made a substantial contribution to the maintenance of functioning riparian habitat during that time. The discharges ceased approximately 2 months before the end of the dry season, likely resulting in some stress to riparian vegetation and wildlife during that time. However, that late in the season, all sensitive bird species would have finished nesting and chicks would have fledged.

Segment 5: The Rio Hondo Below the Whittier Narrows Dam

The Rio Hondo below Whittier Narrows Dam is a concrete-lined channel with no significant biological resources. This lined segment of the river is only seasonally wetted, and aerial photographs indicate that it supports negligible aquatic habitat or riparian vegetation. WRP discharges alone likely make a minor contribution to flow in this segment; rather, it is wetted when surface flows occur in response to rainfall events. Discharges to this segment, therefore, produce negligible biological benefits.

Segment 6: The San Gabriel River Below the San Gabriel Coastal Spreading Grounds

In the baseline year of 2008, Segment 6 received a large fraction of total discharges from the SJCWRP, and all discharges from the LCWRP and LBWRP. In 2008, WRP flow amounted to a total daily discharge of 70 to 100 MGD. Other sources of flow include a relatively small Coyote Creek contribution (15 to 20 MGD), and unquantified dry season flow through storm drains. Although WRP discharges are the largest source of dry-season flow in this channel segment, there are no identified sensitive biological resources in this segment, which is entirely lined and does not support any riparian vegetation. Discharges to this segment, therefore, produce negligible biological benefits to terrestrial biology.

The estuarine portion of Segment 6 supports a variety of marine species and waterfowl. The character of the estuary is influenced by the quantity and quality of freshwater inputs as well as discharges from power-generating facilities. During the summer of 2005, a study of the estuary determined that tidal flow and power generation station discharges dominate the circulation of water in the estuary (Rosenberg 2007). Large fluctuations in river flow that were recorded during the 2005 study caused little if any change in salinity at the upstream end of the estuary and no measurable change in the middle and downstream portions of the estuary (Rosenberg 2007). This indicates that the changes in flow to the estuary that may occur as a result of the program would have minor and probably immeasurable effects on the biota of the San Gabriel River Estuary.

Conclusions of the Biological Analysis of Water Reclamation Plant Effluent Flow

The principal biological resources affected by WRP discharges are found in Segments 2, 3, and 4, all located in the Whittier Narrows area. In each of these segments, intermittent WRP discharges constitute one of the principal sources of flow supporting riparian vegetation and species that are dependent upon riparian vegetation. During the 2008 baseline year dry season, WRP discharges constituted over one-half of flows in Segment 2. WRP discharges were the primary source of dry season flow in Segments 3 and 4, except at times when the LACDPW performs a reservoir release and diverts water to the Rio Hondo through the Zone 1 Ditch. These diversions include deliveries from the Morris, San Gabriel, and Santa Fe Reservoirs.

Biological resources sustained in part by the WRP discharges include a bird listed as endangered by both the federal and state governments (the least Bell's vireo), three species designated by the CDFG as species of special concern (the yellow warbler, yellow-breasted chat, and western pond turtle), and riparian and aquatic habitats protected by the CDFG and, in the Whittier Narrows area, by the county of Los Angeles.

WRP effluent management as proposed in the Clearwater Program would likely result in some years with WRP discharges substantially lower than the baseline in the lined portions of the San Gabriel River. However, flow conditions are not expected to change markedly in the unlined portions of the system based on the modest changes on annual average discharge and the baseline variability in river flow. With regard to Segment 2, non-effluent surface flows that continue throughout the year from the head of the unlined portion of San Jose Creek through the San Gabriel River to the Zone 1 Ditch would prevent significant biological resources impacts.

With regard to Segments 3 and 4, dry-season discharges at a level lower than the 2008 baseline year might result in significant adverse impacts on biological resources, particularly riparian vegetation and species depending on it.

Because substantive changes in flow would only result from a specific major reuse project under the Clearwater Program, a project-level analysis would be conducted for such projects. The potential for program changes to WRP effluent discharge to affect riparian habitats, special-status vegetation communities, or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFG or USFWS is discussed by program element in the following sections. All effluent discharge locations and stream segments are mapped on Figure 6-2.

San Jose Creek Water Reclamation Plant – WRP Effluent Management

Operation

Based on the WRP flow analysis previously described, effluent management at the SJCWRP in conjunction with effluent management at the POWRP has the potential to affect biological resources in the unlined segment of the San Gabriel River (a portion of Segment 2) and channels upstream of the Whittier Narrows Dam (Segment 3). The combined WRP discharges contribute a substantial portion of the flow in the San Gabriel River, and it appears that the effluent currently contributes to the support of riparian vegetation in the unlined segment of the San Gabriel channel. The proposed operation of the SJCWRP would not change the annual average discharge rates for SJC002 and SJC003, two of the three discharge locations utilized by this WRP under this alternative; however, changes to the seasonality of flows could occur, with lower discharge rates during drier times of the year. Additionally, the downstream discharge location (SJC 001) could achieve zero discharge resulting in an operational range of 0 to 49 MGD. A change in operating range at SJC001 would not, by itself, result in indirect effects to riparian vegetation because the downstream segments of the San Gabriel River are concrete and do not support vegetation.

Under some observed conditions in which no effluent is being discharged from the SJCWRP (or the POWRP), flow is apparently maintained in the San Gabriel River via groundwater upwelling, as evidenced by the continued flow of water over the grade-control weirs in the unlined channel. If this condition is consistent, no wetted width reductions or reductions in the quality of the riparian vegetation due to desiccation would occur with the discharges proposed under the program, and potential impacts on riparian habitat would be less than significant. However, because of the inter-annual variability in naturally occurring precipitation, and the variability in flow management due to planned and unplanned constraints on the Sanitation Districts and LACDPW activities, it is unknown whether this would be the case through the lifetime of the program. Given that the annual average combined discharge from SJC002 and SJC003 is not projected to change, no reduction in habitat is expected. Impacts would be less than significant.

Pomona Water Reclamation Plant – WRP Effluent Management

Operation

Based on the WRP flow analysis, the proposed operation of the POWRP would not substantially change the discharge rate relative to the 2008 baseline. The year 2008 was considered a typical treatment and effluent flow year for both operations and receiving water flow rates. Under program operations, the baseline discharge range of 2.2 to 7.0 MGD on a monthly basis would be maintained. Relative to the baseline year of 2008, there would be no flow reduction. In 2008, dry season flows within San Jose

Creek with no effluent discharge from the POWRP or SJCWRP were sufficient to provide flow over the grade-control weirs in the San Gabriel River, and presumably to maintain the wetted width and riparian habitat of Segment 2. Therefore, effluent management would have less than significant impacts on riparian vegetation.

Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

As described in the WRP flow analysis, the WNWRP would discharge 10 MGD on an annual average basis, which exceeds the baseline annual average discharge of 5.4 MGD. The baseline monthly average discharge ranged from 0.4 to 7.9 MGD. Relative to the baseline year of 2008, there would be an increase in flow over time. Effluent discharged from the WNWRP to the Zone 1 Ditch may assist in the support of riparian vegetation along its margins; however, this ditch is typically dry when no effluent is being discharged (except when flows from the San Gabriel River are diverted through the Zone 1 Ditch). Based on recent vegetation mapping of the area, there is a band of freshwater marsh and willow dominated riparian vegetation centered on and north of the ditch that extends up to about 1,000 feet from the Zone 1 Ditch (BonTerra 2010). A significant reduction in flow at this location could indirectly affect the vigor of this riparian vegetation along the Zone 1 Ditch and further downstream, and could make the habitat less suitable to dependent wildlife species. However, operational decisions on whether or not to divert flows through the Zone 1 Ditch are made by the LACDPW and not the Sanitation Districts, and are made irrespective of the availability of recycled water flows upstream.

Effluent discharged from the WNWRP to the San Gabriel River may assist in the support of riparian vegetation from the discharge point to approximately 4,100 feet downstream (or near the San Gabriel River Parkway). A significant reduction in flow to the San Gabriel River during the dry season could decrease the wetted channel and ponding, thereby desiccating riparian vegetation and resulting in a temporary loss of riparian habitat. Because of the unpredictable nature of stormwater and managed flows, it is not possible to predict with certainty the future conditions of riparian habitat in this segment. However, since the discharge from the WNWRP is projected to increase on an annual basis, no reduction in riparian vegetation is expected. Impacts would be less than significant.

CEQA Impact Determination

Operation of Alternative 1 (Program) would not result indirect or indirect impacts on riparian habitats or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFG or USFWS. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact BIO-2. Would Alternative 1 (Program) result in direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species?

One federally listed endangered species, the least Bell's vireo, has been found in riparian habitat of the San Gabriel River system. Habitat of the least Bell's vireo is sustained in part by WRP discharges. The effect of program operations on riparian habitat is discussed under Impact BIO-1. The effect of program construction and/or operations on this species is evaluated under Impact BIO-2.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Nesting least Bell's vireo are known to occur in the riparian habitat in the San Gabriel River within 500 feet from the proposed plant expansion, and could potentially nest less than 300 feet from the construction footprint. During construction of the SJCWRP expansion, indirect impacts on least Bell's vireo nests may occur through behavior modification as a response to construction motion, noise, dust, and lighting. Impacts would be significant before mitigation. Implementation of MM BIO-2 would reduce impacts to less than significant.

San Jose Creek Water Reclamation Plant – Process Optimization

Construction

Nesting least Bell's vireo are known to occur in the riparian habitat in the San Gabriel River approximately 2,000 feet from the proposed construction footprint. Construction for process optimization would be within existing facility boundaries that have already undergone significant disturbance and development. Additionally, the San Gabriel River is buffered from the construction by the SJCWRP East, I-605, and the SJCWRP West. Considering this distance and the ongoing activity associated with I-605 traffic and treatment plant operations, construction for process optimization would have no impact on sensitive species within the San Gabriel River.

Construction for process optimization is approximately 200 feet from the unlined portion of San Jose Creek. San Jose Creek has limited riparian habitat, thus impacts to sensitive species are unlikely. Given the limited riparian habitat and proximity of San Jose Creek to treatment plant operations, I-605 traffic, and Workman Mill Road traffic, impacts on sensitive species that may be present in San Jose Creek would be less than significant.

San Jose Creek Water Reclamation Plant and Pomona Water Reclamation Plant – WRP Effluent Management

Operation

As described in Impact BIO-1, 2008 dry season flows within San Jose Creek with no effluent discharge from the POWRP or SJCWRP were sufficient to provide flow over the grade-control weirs in the San Gabriel River, and presumably to maintain the wetted width and riparian habitat of Segment 2. Therefore, effluent management would not result in a direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species that depends on this riparian vegetation. Impacts would be less than significant.

Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

As described under Impact BIO-1, a significant reduction in flow to the San Gabriel River during the dry season could decrease the wetted channel and ponding, thereby desiccating riparian vegetation and resulting in a temporary loss of riparian habitat. However, because the discharge from the WNWRP is projected to increase on an annual basis, no reduction in riparian vegetation is expected. Therefore, WRP effluent management would not result in a direct or indirect take of a federally listed, threatened, or

endangered plant or wildlife species that depends on this riparian vegetation. Impacts would be less than significant.

CEQA Impact Determination

Construction of plant expansion at the SJCWRP for Alternative 1 (Program) could result in direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species. Impacts would be significant before mitigation. Operation of Alternative 1 (Program) would result in less than significant impacts.

Mitigation

MM BIO-2. To avoid indirect impacts of construction on nesting least Bell's vireo, construction activities within 300 feet of riparian vegetation will be timed to avoid the season when nests may be active (April 1 to July 31). If avoidance of construction within this time period is not feasible, a focused survey for least Bell's vireo will be conducted in the season prior to initiation of construction activities to determine their presence or absence within 300 feet. The focused survey will consist of eight site visits conducted 10 days apart during the period of April 10 to July 31. If occupied habitat and/or nesting individuals are determined to occur within 300 feet of construction, measures to avoid take of least Bell's vireo and occupied habitat will be implemented. These avoidance measures will include conducting a clearance and nest survey within 30 days prior to construction activities to determine the location of nests within 300 feet of construction. Measures, such as erecting a temporary barrier with stacked hay bales, will be implemented to reduce the amount of construction noise and motion in proximity to active nests. In addition, a biologist familiar with least Bell's vireo will periodically monitor construction activities to confirm the least Bell's vireo is not affected by the construction and to ensure avoidance measures remain intact and functional. Night construction within 300 feet of occupied least Bell's vireo nests will not occur unless authorized by the California Department of Fish and Game and U.S. Fish and Wildlife Service.

Residual Impacts

Implementation of MM BIO-2 would reduce impacts on nesting least Bell's vireo during construction of the SJCWRP expansion facilities. Residual impacts on federally listed species would be less than significant.

Impact BIO-3. Would Alternative 1 (Program) result in direct or indirect take of a state-listed, threatened, or endangered plant or wildlife species?

The least Bell's vireo is a state-listed endangered species as well as a federally listed endangered species as discussed under Impact BIO-2. Potential impacts on least Bell's vireo discussed under Impact BIO-2 apply to Impact BIO-3 and are described by program element herein.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

As described under Impact BIO-2, construction of the SJCWRP expansion has the potential to disturb nesting least Bell's vireos. Implementation of MM BIO-3 (same as MM BIO-2) would reduce impacts to less than significant.

San Jose Creek Water Reclamation Plant – Process Optimization

Construction

As described under Impact BIO-2, impacts on nesting least Bell's vireos from construction of process optimization at the SJCWRP would be less than significant.

San Jose Creek Water Reclamation Plant and Pomona Water Reclamation Plant – WRP Effluent Management

Operation

As described in Impact BIO-1, 2008 dry season flows within San Jose Creek with no effluent discharge from the POWRP or SJCWRP were sufficient to provide flow over the grade-control weirs in the San Gabriel River, and presumably to maintain the wetted width and riparian habitat of Segment 2. Therefore, effluent management would have less than significant impacts on state-listed, threatened, or endangered plant or wildlife species that depend on this riparian vegetation.

Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

As described under Impact BIO-1, a significant reduction in flow to the San Gabriel River during the dry season could decrease the wetted channel and ponding, thereby desiccating riparian vegetation and resulting in a temporary loss of riparian habitat. However, because the discharge from the WNWRP is projected to increase on an annual basis, no reduction in riparian vegetation is expected. Therefore, WRP effluent management would not result in direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species that depends on this riparian vegetation. Impacts would be less than significant.

CEQA Impact Determination

Construction of plant expansion at the SJCWRP for Alternative 1 (Program) could result in direct or indirect take of a state-listed, threatened, or endangered plant or wildlife species. Impacts would be significant before mitigation. Operation of Alternative 1 (Program) would result in less than significant impacts.

Mitigation

Implement MM BIO-3 (same as MM BIO-2).

Residual Impacts

Implementation of MM BIO-3 (same as MM BIO-2) would reduce impacts on nesting least Bell's vireo during construction of the SJCWRP plant expansion facilities. Residual impacts on state-listed species would be less than significant.

Impact BIO-5. Would Alternative 1 (Program) result in direct or indirect impacts on any CDFG wildlife species of special concern?

Impact BIO-5 addresses four CDFG species of concern that could be affected by program construction and/or operations. These species are the yellow warbler, yellow-breasted chat, western pond turtle, and the pocketed free-tailed bat.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

During construction of plant expansion at the SJCWRP, indirect impacts on yellow warbler and yellow-breasted chat may occur during nesting through behavior modification as a response to construction motion, noise, and lighting. Construction would occur within 500 feet of nests known to occur within riparian vegetation supported by the San Gabriel River. Impacts would be significant before mitigation. Implementation of MM BIO-5a would reduce the potential impacts on yellow warbler and yellow-breasted chat to less than significant.

San Jose Creek Water Reclamation Plant – Process Optimization

Construction

Portions of the San Gabriel River provide suitable habitat for the yellow warbler and yellow-breasted chat. Construction for process optimization would be within existing facility boundaries that have already undergone significant disturbance and development. Additionally, the San Gabriel River is buffered from the construction by the SJCWRP East, I-605, and the SJCWRP West. Considering this distance and the ongoing activity associated with I-605 traffic and treatment plant operations, construction for process optimization would have no impact on sensitive species within the San Gabriel River.

Construction for process optimization is approximately 200 feet from the unlined portion of San Jose Creek. San Jose Creek has limited riparian habitat, thus impacts on species of special concern are unlikely. If such species are present, minor indirect impacts may occur due to construction noise, dust, and traffic. However, given the limited riparian habitat and proximity of San Jose Creek to treatment plant operations, I-605 traffic, and Workman Mill Road traffic, impacts on species of special concern that may be present in San Jose Creek would be less than significant.

San Jose Creek Water Reclamation Plant and Pomona Water Reclamation Plant – WRP Effluent Management

Operation

Based on the WRP flow analysis described under Impact BIO-1 and the potential impacts on riparian habitat, effluent management at the SJCWRP and POWRP is not expected to reduce available riparian habitat quality or quantity in Segment 2 (Figure 6-2) that supports yellow warbler and yellow-breasted chat. Similarly, ponded areas suitable for western pond turtles would be maintained. Therefore, impacts on western pond turtle, yellow warbler, and yellow breasted chat would be less than significant.

Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

Based on the WRP flow analysis described under Impact BIO-1 and the potential impacts on riparian habitat, effluent management at the WNWRP is not expected to reduce available riparian habitat quality or quantity in unlined segments of the San Gabriel River, the Rio Hondo, and the Zone 1 Ditch (Segments 2, 3, and 4 shown in Figure 6-2) that support yellow warbler and yellow-breasted chat. Similarly, ponded areas suitable for western pond turtle are not expected to be reduced. Discussion of

these mechanisms and locations are described in the WRP flow analysis under Impact BIO-1. Therefore, impacts on western pond turtle, yellow warbler, and yellow breasted chat would be less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

Construction of the solids processing facility at the JWPCP would require removal of a number of existing rectangular digesters. Some buildings can provide potential roost habitat for the pocketed free-tailed bat, which has been observed within approximately 0.5 to 1 mile from the digesters. However, because the digesters do not have crevices or overhangs, they do not provide suitable roost habitat and the potential impacts of construction on the pocketed free-tailed bat would be less than significant.

CEQA Impact Determination

Construction of plant expansion at the SJCWRP for Alternative 1 (Program) would result in indirect impacts on CDFG wildlife species of special concern. Impacts would be significant before mitigation. Operation of Alternative 1 (Program) would result in less than significant impacts.

Mitigation

MM BIO-5a. To avoid indirect impacts of construction on nesting yellow warbler and yellow-breasted chat, construction activities within 100 feet of riparian vegetation will be timed to occur outside the season when nests may be active (April 1 to July 31). If avoidance of construction within this time period is not feasible, a preconstruction nesting survey for yellow warbler and yellow-breasted chat will be conducted 7 days prior to initiation of construction to determine the presence or absence of nests within 100 feet. If nesting individuals are determined to occur within 100 feet of construction, avoidance and minimization measures will be implemented. These could include erecting a temporary barrier, such as stacked hay bales, adjacent to the nest location to reduce the amount of construction noise and motion entering the riparian habitat.

Residual Impacts

Implementation of MM BIO-5a would reduce impacts on nesting yellow warbler and yellow-breasted chat during construction of the SJCWRP expansion facilities to less than significant. Residual impacts on CDFG wildlife species of special concern would be less than significant.

Impact BIO-8. Would Alternative 1 (Program) result in direct or indirect impacts on wetlands, waters, or special aquatic habitats regulated by the Corps, CDFG, CCC, RWQCB, or the County of Los Angeles?

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, and Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

Based on the WRP flow analysis described under Impact BIO-1, impacts on wetlands, waters, or special aquatic habitats would be less than significant. Impacts related to water quality are evaluated in Chapter 11.

CEQA Impact Determination

Operation of Alternative 1 (Program) would not result in indirect impacts on wetlands, waters, or special aquatic habitats regulated by the Corps, CDFG, CCC, RWQCB, or the County of Los Angeles. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact BIO-9. Would Alternative 1 (Program) directly or indirectly interfere with the movement of any freshwater fish or terrestrial wildlife species through impacts on or reduction in quality of a documented wildlife corridor or habitat linkage?

San Jose Creek Water Reclamation Plant and Pomona Water Reclamation Plant – WRP Effluent Management

Operation

As described under Impact BIO-1, effluent management at the POWRP and the SJCWRP is not expected to alter riparian habitat in a portion of the San Jose Creek and San Gabriel River channel. In addition, no native freshwater fish are present and no barriers to movement of native freshwater fish or wildlife movement would occur. Impacts would be less than significant.

As described in Chapter 11, effluent management discharges are a minor component of the total discharges into the San Gabriel River Estuary. As a result, alterations in effluent management would have an insignificant effect on salinity in the estuary and the related movement of freshwater species during either high or low flow conditions. Therefore, the impacts of SJCWRP and POWRP effluent management on the movement of freshwater fish in the San Gabriel River Tidal Prism would be less than significant.

Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

As described under Impact BIO-1 and Impact BIO-2, effluent management at the WNWRP is not expected to alter riparian habitat in the Zone 1 Ditch and the Rio Hondo. In addition, no native freshwater fish are present and no barriers to movement of native freshwater fish or wildlife movement would occur. Impacts would be less than significant.

As described in Chapter 11, effluent management discharges are a minor component of the total discharges into the San Gabriel River Estuary. As a result, alterations in effluent management would have an insignificant effect on salinity in the estuary and the related movement of freshwater species during either high or low flow conditions. Therefore, the impacts of WNWRP effluent management on the movement of freshwater fish in the San Gabriel River Tidal Prism would be less than significant.

CEQA Impact Determination

Operation of Alternative 1 (Program) would not directly or indirectly interfere with the movement of any native freshwater fish or terrestrial wildlife species through impacts on or reduction in quality of a documented wildlife corridor or habitat linkage. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact BIO-10. Would Alternative 1 (Program) conflict with other federal, state, or local policies or ordinances protecting biological resources?

In addition to the policies and ordinances discussed under previous thresholds, the program would be subject to the restrictions of the federal MBTA and the California Fish and Game Code, which regulate activities that have the potential to cause take of migratory birds including nests and eggs. The California Fish and Game Code also protects all native birds and their nests. Local tree protection ordinances, local ordinances protecting biological resources, and SEAs designated by Los Angeles County are also evaluated under this threshold.

Conveyance System – Conveyance Improvements

Construction

Construction of conveyance improvements would be subject to all local ordinances. Conveyance system improvements could potentially conflict with local tree protection ordinances (see Appendix 6-A) and other policies protecting biological resources; however, it is the Sanitation Districts' standard practice to address such conflicts through project-level review and permitting when specific conveyance improvement projects are designed. Impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Construction of the SJCWRP expansion would not conflict with tree protection (Appendix 6-A) or other local biological resource ordinances.

Active bird nesting could occur within the vicinity of the construction of the SJCWRP plant expansion. The Sanitation Districts would require contractors to adhere to the MBTA and California Fish and Game Code requirements pertaining to disturbance of active bird nests and, if applicable, nest relocation and inactive nest removal. Impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Process Optimization

Construction

Construction for process optimization at the SJCWRP would not conflict with tree protection or other local biological resource ordinances.

The construction footprint for process optimization could be within the vicinity of potential nesting habitat associated with San Jose Creek, and nesting raptors and songbirds may be potentially present. The Sanitation Districts would require contractors to adhere to the MBTA and California Fish and Game Code requirements pertaining to disturbance of active bird nests and, if applicable, nest relocation and inactive nest removal. Impacts would be less than significant.

Pomona Water Reclamation Plant – Process Optimization

Construction

Construction of process optimization facilities at the POWRP would occur on previously developed land and would not conflict with the City of Pomona Tree Protection and Preservation Program (Appendix 6-A), or other local biological resource ordinances.

The construction of process optimization facilities could be within the vicinity of potential nesting habitats. The Sanitation Districts would require contractors to adhere to the MBTA and California Fish and Game Code requirements pertaining to disturbance of active bird nests and, if applicable, nest relocation and inactive nest removal. Impacts would be less than significant.

Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

As described under Impact BIO-1, effluent management at the WNWRP is not expected to alter water-dependent riparian vegetation in the Whittier Narrows Recreation Area, designated as SEA-42 under the Los Angeles County General Plan. Impacts would be less than significant.

Long Beach Water Reclamation Plant – Process Optimization

Construction

Construction of process optimization facilities at the LBWRP would not occur on a public right-of-way where the City of Long Beach Tree Maintenance Policy (Appendix 6-A) would apply, and would not conflict with other local biological resource ordinances.

During construction of process optimization, direct impacts on nesting birds could occur because the footprint is currently undeveloped. However, the ruderal scrub vegetation currently on site provides such limited potential nesting habitat that the potential impacts on nesting birds would be less than significant.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not conflict with other federal, state, or local policies or ordinances protecting biological resources. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

6.4.3.2 Project

Impact BIO-10. Would Alternative 1 (Project) conflict with other federal, state, or local policies or ordinances protecting biological resources?

Construction of project elements would be subject to the restrictions of the federal MBTA, which regulates activities that have the potential to cause take of migratory birds including nests and eggs, and the California Fish and Game Code, which protects all native birds and their nests. Local tree protection ordinances are also evaluated under this threshold. There are no SEAs designated by Los Angeles County within the study area of project elements proposed under Alternative 1 (Project).

Shaft Site – JWPCP East

Construction

CEQA Analysis
Construction of the JWPCP East shaft site would be subject to the City of Carson Tree Preservation and Protection Ordinance (Appendix 6-A); however, the project would not require clearing of any trees that grow along the roadways that surround the project area.

The construction of the JWPCP East shaft site could be within the vicinity of potential nesting habitats. The Sanitation Districts would require contractors to adhere to the MBTA and California Fish and Game Code requirements pertaining to disturbance of active bird nests and, if applicable, nest relocation and inactive nest removal. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – LAXT

Construction

CEQA Analysis
Construction at the LAXT shaft site would be subject to the City of Los Angeles Protected Tree Relocation and Replacement Policy (Appendix 6-A); however, no protected trees grow on the site, and there would be no impacts.

Construction at the LAXT shaft site is not expected to result in direct impacts on other biological resources, including nesting birds, because the footprint is currently developed. There are surrounding areas that are planted with ornamental landscaping where potential nesting may occur. The Sanitation Districts would require contractors to adhere to the MBTA and California Fish and Game Code requirements pertaining to disturbance of active bird nests and, if applicable, nest relocation and inactive nest removal. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With

respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not conflict with other federal, state, or local policies or ordinances protecting biological resources. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not conflict with other federal, state, or local policies or ordinances protecting biological resources. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

6.4.3.3 Impact Summary – Alternative 1

Impacts on terrestrial biological resources analyzed in this EIR/EIS for Alternative 1 are summarized in Table 6-6 and Table 6-7. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 6-6. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact BIO-1. Would Alternative 1 (Program) result in direct or indirect impacts on riparian habitats, special-status vegetation communities, or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFG or USFWS?			
SJCWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
WNWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 6-6 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact BIO-2. Would Alternative 1 (Program) result in direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species?			
SJCWRP			
Plant Expansion	CEQA Significant Impact During Construction	MM BIO-2. To avoid indirect impacts of construction on nesting least Bell's vireo, construction activities within 300 feet of riparian vegetation will be timed to avoid the season when nests may be active (April 1 to July 31). If avoidance of construction within this time period is not feasible, a focused survey for least Bell's vireo will be conducted in the season prior to initiation of construction activities to determine their presence or absence within 300 feet. The focused survey will consist of eight site visits conducted 10 days apart during the period of April 10 to July 31. If occupied habitat and/or nesting individuals are determined to occur within 300 feet of construction, measures to avoid take of least Bell's vireo and occupied habitat will be implemented. These avoidance measures will include conducting a clearance and nest survey within 30 days prior to construction activities to determine the location of nests within 300 feet of construction. Measures, such as erecting a temporary barrier with stacked hay bales, will be implemented to reduce the amount of construction noise and motion in proximity to active nests. In addition, a biologist familiar with least Bell's vireo will periodically monitor construction activities to confirm the least Bell's vireo is not affected by the construction and to ensure avoidance measures remain intact and functional. Night construction within 300 feet of occupied least Bell's vireo nests will not occur unless authorized by the California Department of Fish and Game and U.S. Fish and Wildlife Service.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
WNWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 6-6 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact BIO-3. Would Alternative 1 (Program) result in direct or indirect take of a state-listed, threatened, or endangered plant or wildlife species?			
SJCWRP			
Plant Expansion	CEQA Significant Impact During Construction	MM BIO-3 (same as MM BIO-2)	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
WNWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact BIO-5. Would Alternative 1 (Program) result in direct or indirect impacts on any CDFG wildlife species of special concern?			
SJCWRP			
Plant Expansion	CEQA Significant Impact During Construction	MM BIO-5a. To avoid indirect impacts of construction on nesting yellow warbler and yellow-breasted chat, construction activities within 100 feet of riparian vegetation will be timed to occur outside the season when nests may be active (April 1 to July 31). If avoidance of construction within this time period is not feasible, a preconstruction nesting survey for yellow warbler and yellow-breasted chat will be conducted 7 days prior to initiation of construction to determine the presence or absence of nests within 100 feet. If nesting individuals are determined to occur within 100 feet of construction, avoidance and minimization measures will be implemented. These could include erecting a temporary barrier, such as stacked hay bales, adjacent to the nest location to reduce the amount of construction noise and motion entering the riparian habitat.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 6-6 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
WNWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Impact BIO-8. Would Alternative 1 (Program) result in direct or indirect impacts on wetlands, waters, or special aquatic habitats regulated by the Corps, CDFG, CCC, RWQCB, or the County of Los Angeles?			
SJCWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
WNWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact BIO-9. Would Alternative 1 (Program) directly or indirectly interfere with the movement of any freshwater fish or terrestrial wildlife species through impacts on or reduction in quality of a documented wildlife corridor or habitat linkage?			
SJCWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
WNWRP			
WRP Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact BIO-10. Would Alternative 1 (Program) conflict with other federal, state, or local policies or ordinances protecting biological resources?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 6-6 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
WNWRP			
WRP Effluent Management	CEQA Less than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 6-7. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact BIO-10. Would Alternative 1 (Project) conflict with any other federal, state, or local policies or ordinances protecting biological resources?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

6.4.4 Alternative 2

6.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

6.4.4.2 Project

The impacts for the onshore tunnel and the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

6.4.4.3 Impact Summary – Alternative 2

Impacts on terrestrial biological resources for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 6-6. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 6-8. The proposed mitigation, where feasible, and the significance of the impact following mitigation are also listed in the tables.

Table 6-8. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact BIO-10. Would Alternative 2 (Project) conflict with any other federal, state, or local policies or ordinances protecting biological resources?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

6.4.5 Alternative 3

6.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

6.4.5.2 Project

Impact BIO-5. Would Alternative 3 (Project) result in direct or indirect impacts on any CDFG wildlife species of special concern?

Impact BIO-5 evaluates the impact of construction under Alternative 3 (Project) on one CDFG species of concern, the burrowing owl.

Shaft Site – Angels Gate

Construction

CEQA Analysis

Ground squirrels inhabit a portion of the unpaved area at this site. Their burrows are suitable for use by burrowing owls, a California species of special concern. This area is frequented by people and the suitable habitat type is turf grass. Despite the presence of suitable burrows, the degree of disturbance at

this site makes the potential for burrowing owl low. No burrowing owl or burrowing owl sign was observed during the habitat assessment conducted on February 23, 2010; however, burrowing owls are known to nest in other areas with relatively high levels of activity, so their presence is a possibility. During construction of the Angels Gate shaft site, direct and indirect impacts on burrowing owl, if present, may occur that could cause individual harm and/or nest failure through destruction of burrows or behavior modification as a response to motion, noise, and lighting associated with construction. Impacts resulting from construction would be significant before mitigation. MM BIO-5b would reduce impacts to less than significant, and would include a survey protocol and mitigation guidelines established by the CDFG (CDFG 1995).

NEPA Analysis

CDFG wildlife species of concern do not fall under federal jurisdiction and thus are outside the Corps' NEPA scope of analysis described in Section 3.5.

CEQA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) could result in direct or indirect impacts on CDFG wildlife species of special concern. Impacts under CEQA would be significant before mitigation.

Mitigation

MM BIO-5b. A preconstruction survey for burrowing owl will be conducted within 30 days prior to initiation of construction at the Angels Gate shaft site according to California Department of Fish and Game (CDFG) burrowing owl survey protocol and mitigation guidelines. All suitable habitat on the shaft site and within a 250-foot buffer will be surveyed for burrowing owl and/or evidence of burrowing owl. Mitigation for an occupied burrow will include avoiding construction within 250 feet of an active nest burrow during the February 1 to August 31 nesting season, and 160 feet of an occupied burrow from September 1 to January 31. If construction timing cannot be adjusted to avoid disturbance, or if an occupied burrow would be physically disturbed by construction, the owls would be relocated according to CDFG guidelines.

Residual Impacts

Impacts on burrowing owls at the Angels Gate shaft site would be reduced with implementation of MM BIO-5b. Residual impacts would be less than significant.

NEPA Impact Determination

No determination of significance was made because this impact is not applicable under NEPA.

Mitigation

Not applicable.

Residual Impacts

Not applicable.

Impact BIO-10. Would Alternative 3 (Project) conflict with any other federal, state, or local policies or ordinances protecting biological resources?

The project would be subject to the City of Los Angeles Tree Relocation and Replacement Policy (Appendix 6-A) and all other city policies and ordinances protecting biological resources.

In addition to the policies and ordinances discussed under previous thresholds, the project would be subject to the restrictions of the MBTA and the California Fish and Game Code. These ordinances regulate activities that have the potential to cause take of migratory birds, including nests and eggs.

Shaft Site – JWPCP West

Construction

CEQA Analysis

Construction of the JWPCP West shaft site would be subject to the City of Los Angeles Tree Relocation and Replacement Policy (Appendix 6-A); however, the project would not require clearing of any trees that grow along the roadways that surround the project area.

The construction of the JWPCP West shaft site could be within the vicinity of potential nesting habitats. The Sanitation Districts would require contractors to adhere to the MBTA and California Fish and Game Code requirements pertaining to disturbance of active bird nests and, if applicable, nest relocation and inactive nest removal. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

The only tree species located at the site are palms, so the project would be in compliance with the city tree protection and relocation policy.

The Angels Gate shaft site is located in what is currently partially undeveloped land. A habitat assessment was conducted on February 23, 2010, in the area surrounding the Angels Gate shaft site to determine whether any nesting occurs within the vicinity. The assessment revealed a nesting site used in 2008 and 2009 by American peregrine falcon, a state fully protected species. The nesting site rests approximately 200 feet from the Angels Gate shaft site location. It is located on a side of a cliff that faces away from the shaft site, and there is no direct line of site from the nesting site to the shaft site location. A pair of American peregrine falcons was also observed within the cliff area during the assessment. American peregrine falcon is a formerly listed (federal and state endangered) species. Although this species is considered recovered, it retains state fully protected status. The Sanitation Districts would require contractors to adhere to the MBTA and California Fish and Game Code requirements pertaining to disturbance of active bird nests and, if applicable, nest relocation and inactive nest removal. As provided by the state and federal regulations, reasonable steps would be taken as necessary to avoid take. Impacts would be less than significant.

The Pacific Ocean shoreline located west of the Angels Gate shaft site is designated as an SEA in the Los Angeles County General Plan. Although construction has the potential to block local wildlife movement, the Angels Gate site is located on the inland side of the road from the SEA, and the SEA is bordered by bluffs to the east that form a natural barrier to wildlife movement. As a result, little if any wildlife

movement is expected to be blocked during project construction. Indirect impacts on the SEA would be less than significant, and no mitigation is required.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not conflict with other federal, state, or local policies or ordinances protecting biological resources. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not conflict other federal, state, or local policies or ordinances protecting biological resources. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

6.4.5.3 Impact Summary – Alternative 3

Impacts on terrestrial biological resources for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 6-6. Impacts analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 6-9. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 6-9. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact BIO-5. Would Alternative 3 (Project) result in direct or indirect impacts on any CDFG wildlife species of special concern?				
Shaft Site				
Angels Gate	CEQA Significant Impact During Construction	N/A	MM BIO-5b. A preconstruction survey for burrowing owl will be conducted within 30 days prior to initiation of construction at the Angels Gate shaft site according to California Department of Fish and Game (CDFG) burrowing owl survey protocol and mitigation guidelines. All suitable habitat on the shaft site and within a 250-foot buffer will be surveyed for burrowing owl and/or evidence of burrowing owl. Mitigation for an occupied burrow will include avoiding construction within 250 feet of an active nest burrow during the February 1 to August 31 nesting season, and 160 feet of an occupied burrow from September 1 to January 31. If construction timing cannot be adjusted to avoid disturbance, or if an occupied burrow would be physically disturbed by construction, the owls would be relocated according to CDFG guidelines.	CEQA Less Than Significant Impact During Construction
	NEPA N/A	N/A	N/A	NEPA N/A
Impact BIO-10. Would Alternative 3 (Project) conflict with any other federal, state, or local policies or ordinances protecting biological resources?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

6.4.6 Alternative 4 (Recommended Alternative)

6.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

6.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years.

Impact BIO-2. Would Alternative 4 (Project) result in direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species?

Impact BIO-2 evaluates the impact of construction under Alternative 4 (Project) on the coastal California gnatcatcher, federally listed as threatened.

Shaft Site – Royal Palms

Construction

CEQA Analysis
The area surrounding the Royal Palms shaft site is mapped as coastal bluff scrub habitat, a type that could potentially support nesting coastal California gnatcatchers. However, the remaining coastal sage scrub habitat in the vicinity of this site is sparse and fragmented. As a result, this habitat is of low quality and unlikely to support coastal California gnatcatchers. In addition, much of the remaining coastal sage scrub habitat is located towards the top of the bluff where road noise and light are likely to be greater than noise, light, and activity from construction of the project. Therefore, impacts on coastal California gnatcatchers would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction of Alternative 4 (Project) would not result in direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 4 (Project) would not result in direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact BIO-10. Would Alternative 4 (Project) conflict with any other federal, state, or local policies or ordinances protecting biological resources?

Because the project would be located within 300 feet of the ordinary high water mark of the Pacific Ocean, it would require a coastal development permit administered by the city of Los Angeles. The coastal development permit could include provisions to protect biological resources.

Construction of project elements would be subject to the restrictions of the federal MBTA, which regulates activities that have the potential to cause take of migratory birds including nests and eggs, and the California Fish and Game Code, which protects all native birds and their nests. Local tree protection ordinances and SEAs are also evaluated under this threshold.

Shaft Site – Royal Palms

Construction

CEQA Analysis

The area surrounding the proposed location of the Royal Palms shaft site is partially vegetated with trees and shrubs that could support nesting birds. The Sanitation Districts would require contractors to adhere to the MBTA and California Fish and Game Code requirements pertaining to disturbance of active bird nests and, if applicable, nest relocation and inactive nest removal. Impacts would be less than significant.

The Pacific Ocean shoreline located southwest of the Royal Palms shaft site is designated as an SEA in the Los Angeles County General Plan. Although construction has the potential to block local wildlife movement, the Royal Palms construction footprint is bordered by bluffs to the east and paved road to the west. As a result, little if any wildlife movement is expected to be blocked during project construction. Indirect impacts on the SEA would be less than significant.

Coastal species would be unaffected by development of the Royal Palms shaft site because it is located inland of a parking lot and road between the site and the coast.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not conflict with other federal, state, or local policies or ordinances protecting biological resources. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not conflict with federal, state, or local policies or ordinances protecting biological resources. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation required.

Residual Impacts

Impacts would be less than significant.

6.4.6.3 Impact Summary – Alternative 4

Impacts on terrestrial biological resources for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 6-6. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 6-10. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 6-10. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact BIO-2. Would Alternative 4 (Project) result in direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species?				
Shaft Site				
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant or Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact BIO-10. Would Alternative 4 (Project) conflict with other federal, state, or local policies or ordinances protecting biological resources?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

6.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an environmental impact report (EIR) must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

6.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the SJCWRP, WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994).

6.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. An emergency discharge or sewer overflow has the potential to direct secondary treated and untreated wastewater flows into the Wilmington Drain and ultimately Machado Lake as discussed in Chapters 11 and 20. Wastewater contaminants could have impacts on individual organisms present during emergency discharges. Although plants and wildlife downstream of the discharge would potentially be exposed to treated or untreated wastewater, these discharges would be temporary, would be most likely during periods of high precipitation runoff, and would not likely alter the vegetative communities downstream. The Dominguez Channel is a saltwater environment, and discharges to this waterway would not have an impact on terrestrial and freshwater biological resources. The emergency discharges would not result in significant impacts on terrestrial biological resources. Therefore, terrestrial biological resource impacts would be less than significant under Alternative 5 (Project).

6.4.7.3 Impact Summary – Alternative 5

Impacts on terrestrial biological resources for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 6-6, excluding process optimization. Note that the mitigation measures for Alternatives 1 through 4 (Program) are not applicable to Alternative 5 (Program). There would be less than significant impacts on terrestrial biological resources for Alternative 5 (Project).

6.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.6 and 6.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

6.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

6.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

6.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Impacts for Alternative 6 would be the same as discussed under Alternative 5 (Project); therefore, there would be less than significant impacts on terrestrial biological resources for Alternative 6.

6.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on terrestrial biological resources resulting from the construction and/or operation of program and/or project elements is provided in Table 6-11. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 6-11. Comparison of Significant Impacts and Mitigation for Terrestrial Biological Resources for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternatives 1, 2, 3, 4, and 5[a] (Program)			
Impact BIO-2. Would Alternatives 1, 2, 3, 4, and 5 (Program) result in direct or indirect take of a federally listed, threatened, or endangered plant or wildlife species?			
SJCWRP – Plant Expansion	CEQA Significant Impact During Construction	MM BIO-2. To avoid indirect impacts of construction on nesting least Bell's vireo, construction activities within 300 feet of riparian vegetation will be timed to avoid the season when nests may be active (April 1 to July 31). If avoidance of construction within this time period is not feasible, a focused survey for least Bell's vireo will be conducted in the season prior to initiation of construction activities to determine their presence or absence within 300 feet. The focused survey will consist of eight site visits conducted 10 days apart during the period of April 10 to July 31. If occupied habitat and/or nesting individuals are determined to occur within 300 feet of construction, measures to avoid take of least Bell's vireo and occupied habitat will be implemented. These avoidance measures will include conducting a clearance and nest survey within 30 days prior to construction activities to determine the location of nests within 300 feet of construction. Measures, such as erecting a temporary barrier with stacked hay bales, will be implemented to reduce the amount of construction noise and motion in proximity to active nests. In addition, a biologist familiar with least Bell's vireo will periodically monitor construction activities to confirm the least Bell's vireo is not affected by the construction and to ensure avoidance measures remain intact and functional. Night construction within 300 feet of occupied least Bell's vireo nests will not occur unless authorized by the California Department of Fish and Game and U.S. Fish and Wildlife Service.	CEQA Less Than Significant Impact During Construction
Impact BIO-3. Would Alternatives 1, 2, 3, 4, and 5 (Program) result in direct or indirect take of a state-listed, threatened, or endangered plant or wildlife species?			
SJCWRP – Plant Expansion	CEQA Significant Impact During Construction	MM BIO-3 (same as MM BIO-2)	CEQA Less Than Significant Impact During Construction
Impact BIO-5. Would Alternatives 1, 2, 3, 4, and 5 (Program) result in direct or indirect impacts on any CDFG wildlife species of special concern?			
SJCWRP – Plant Expansion	CEQA Significant Impact During Construction	MM BIO-5a. To avoid indirect impacts of construction on nesting yellow warbler and yellow-breasted chat, construction activities within 100 feet of riparian vegetation will be timed to occur outside the season when nests may be active (April 1 to July 31). If avoidance of construction within this time period is not feasible, a preconstruction nesting survey for yellow warbler and yellow-breasted chat will be conducted 7 days prior to initiation of construction to determine the presence or absence of nests within 100 feet. If nesting individuals are determined to occur within 100 feet of construction, avoidance and minimization measures will be implemented. These could include erecting a temporary barrier, such as stacked hay bales, adjacent to the nest location to reduce the amount of construction noise and motion entering the riparian habitat.	CEQA Less Than Significant Impact During Construction

[a] Process optimization would not apply to Alternative 5 (Program). Additionally, all mitigation measures and residual impacts would not apply to Alternative 5 (Program).

Table 6-11 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 3 (Project)			
Impact BIO-5. Would Alternative 3 (Project) result in direct or indirect impacts on any CDFG wildlife species of special concern?			
Shaft Site – Angels Gate	CEQA Significant Impact During Construction	MM BIO-5b. A preconstruction survey for burrowing owl will be conducted within 30 days prior to initiation of construction at the Angels Gate shaft site according to California Department of Fish and Game (CDFG) burrowing owl survey protocol and mitigation guidelines. All suitable habitat on the shaft site and within a 250-foot buffer will be surveyed for burrowing owl and/or evidence of burrowing owl. Mitigation for an occupied burrow will include avoiding construction within 250 feet of an active nest burrow during the February 1 to August 31 nesting season, and 160 feet of an occupied burrow from September 1 to January 31. If construction timing cannot be adjusted to avoid disturbance, or if an occupied burrow would be physically disturbed by construction, the owls would be relocated according to CDFG guidelines.	CEQA Less Than Significant Impact During Construction
	NEPA N/A	N/A	NEPA N/A

Chapter 7
CULTURAL RESOURCES (TERRESTRIAL AND MARINE)

7.1 Introduction

This chapter describes the existing conditions and regulations applicable to historical, archaeological, and paleontological resources, both terrestrial and marine; analyzes the potential impacts that would result from the implementation of the program and project elements; and determines the significance of those impacts. Where feasible, mitigation measures to reduce impacts are provided.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the cultural resources impact analysis for each program element is summarized by alternative in Table 7-1.

Table 7-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	C
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	C
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 7-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	C
Biosolids Management	X	X	X	X	X	N/A	O	-
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 7-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 7.4.7 for a discussion of the No-Project Alternative.
[b] See Section 7.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the cultural resources impact analysis for each project element is summarized by alternative in Table 7-2.

Table 7-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	C
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	C
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	C
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	C
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	C,O	C
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C
JWPCP West			X	X	N/A	N/A	C,O	C
TraPac	X	X			N/A	N/A	C,O	C
LAXT	X	X			N/A	N/A	C,O	C
Southwest Marine	X	X			N/A	N/A	C,O	C
Angels Gate			X		N/A	N/A	C,O	C
Royal Palms				X	N/A	N/A	C,O	C
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	C,O	C,O
PV Shelf		X	X		N/A	N/A	C,O	C,O

Table 7-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	C,O

[a] See Section 7.4.7 for a discussion of the No-Project Alternative.
[b] See Section 7.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

7.2 Environmental Setting

7.2.1 Regional Setting

7.2.1.1 Geomorphic Setting

The project area is located within the Los Angeles Basin (a broad, level expanse of land comprising more than 800 square miles that extends from Cahuenga Peak south to the Pacific Coast, and from Topanga Canyon southeast to the vicinity of Aliso Creek). Prior to historical settlement of the area, the basin was characterized by extensive inland prairies and a lengthy coastal strand, with elevations approximately 500 feet above mean sea level. The Los Angeles Basin is traversed by several large watercourses, most notably the Los Angeles, Rio Hondo, San Gabriel, and Santa Ana Rivers. Marshlands fed by fresh or salt water also once covered many portions of the area. To the west, the coastal region encompasses approximately 375 square miles of varied terrain. West of Topanga Canyon, the terrain is rugged; the steep, westward slopes of the Santa Monica Mountains reach 1,000 feet or more in elevation, except where stream-cut ravines and canyons drain onto narrow beaches at the water's edge. From Topanga Canyon southward to the Palos Verdes Peninsula, a distance of roughly 22 miles, the coast is flat and level. Extensive marshlands once existed near the mouth of Ballona Creek in the area now known as Playa del Rey. The terrain becomes rugged once again as the coast follows Palos Verdes Peninsula for a distance of approximately 12 miles before reaching San Pedro Bay, which was characterized by extensive mud flats and sand bars in prehistoric times (McCawley 1996).

Alluvial sediments from nearby hills and mountains have filled the Los Angeles Basin over time with thick sedimentary deposits. Throughout the basin, surface deposits (usually 5 feet or more in thickness) generally consist of younger alluvium, which does not contain significant vertebrate fossils. Underlying the younger alluvium is older Quaternary alluvium, which does contain significant paleontological resources and fossil deposits. The older Quaternary alluvium is exposed on the ground surface in limited areas of the Los Angeles Basin, but more typically, the older Quaternary alluvium is present at a depth of 5 feet or more below the natural ground surface.

7.2.1.2 Ethnographic Setting

The project area lies within the territory of the Gabrielino (or Tongva) Native American people (Bean and Smith 1978). The Gabrielino are characterized as one of the most complex societies in native Southern California, second perhaps only to the Chumash, their coastal neighbors to the northwest. This complexity derives from their overall economic, ritual, and social organization (Bean and Smith 1978:538; Kroeber 1925:621).

The Gabrielino, an Uto-Aztecan (or Shoshonean) group, may have entered the Los Angeles Basin as recently as 1,500 years before present (BP). In early protohistoric times, the Gabrielino occupied a large territory including the entire San Fernando Valley and Los Angeles Basin. This region encompasses the coast from Malibu to Aliso Creek, parts of the Santa Monica Mountains, the San Fernando Valley, the San Gabriel Valley, the San Bernardino Valley, the northern parts of the Santa Ana Mountains, and much of the middle to the lower Santa Ana River. They also occupied the islands of Santa Catalina, San Clemente, and San Nicolas. Within this large territory were more than 50 residential communities with populations ranging from 50 to 150 individuals. The Gabrielino had access to a broad and diverse resource base. This wealth of resources, combined with an effective subsistence technology, well-developed trade network, and ritual system, resulted in a society that was among one of the most materially wealthy and culturally sophisticated groups in California at the time of contact with Europeans (McCawley 1996).

7.2.1.3 Prehistoric Terrestrial Setting

The prehistoric occupation of Southern California is divided chronologically into four temporal phases or horizons extending from about 12,000 years ago to the arrival of the first Europeans in the region (Moratto 1984). The names, durations, and characteristics of each of the temporal horizons are defined in Table 7-3.

Table 7-3. Temporal Horizons

Horizon	Horizon Name	Duration	Characteristics
Horizon I	Early Man Horizon	12,000 years ago to about 5000 BC	▪ First appearance of semi-nomadic people in the region ▪ Subsisted primarily on game
Horizon II	Millingstone Horizon or Encinitas Tradition	5000–1500 BC	▪ Widespread use of milling stones (manos and metates), core tools, and few projectile points or bone and shell artifacts ▪ Diversification of subsistence activities and a more sedentary settlement pattern ▪ Hunting became less important, and reliance on collecting shellfish and vegetal resources increased (Moratto 1984)
Horizon III	Intermediate Horizon or Campbell Tradition	1500 BC and continued until about 600–800 AD	▪ Shift from the use of milling stones to increased use of mortar and pestle, possibly indicating a greater reliance on acorns as a food source ▪ Projectile points become more abundant ▪ Increased use of both land and sea mammals (Moratto 1984)
Horizon IV	Late Horizon	AD 600–800 to the arrival of Europeans	▪ Dense populations ▪ Diversified hunting and gathering subsistence strategies, including intensive fishing and sea mammal hunting ▪ Extensive trade networks ▪ Use of the bow and arrow ▪ A general cultural elaboration (Moratto 1984)

7.2.1.4 Prehistoric Maritime Setting

The prehistoric maritime setting extends from approximately 12,000 years ago to until European contact in 1542. The maritime setting mirrors that of the prehistoric terrestrial setting (see Section 7.2.1.3) and includes four temporal phases or horizons (see Table 7-3). By Horizon II (5000 BC to 1500 BC), aboriginal populations likely became more dependent on resources from the marine environment (such as shellfish) within the littoral and near-shore environment. Other subsistence resources likely consisted of fish, crustaceans, sea mammals, algae, and sea birds (Pierson et al. 1987:66). Rising sea levels, which

began approximately 18,000–19,000 years ago, subsequently inundated prehistoric sites associated with the maritime setting in Southern California.

Rising sea levels have affected coastal regions around the globe in what is known as the Flandrian Transgression. This rise in sea levels is a result of complex regional and global climatic patterns and included causes such as the melting of the Wisconsin continental polar and mountain piedmont glaciers. The sea level in Southern California was approximately 120 meters (approximately 400 feet) lower than present day prior to the Flandrian Transgression. As water levels began to rise, shorelines were forced inland over the edges of the San Pedro Shelf (SP Shelf) and Palos Verdes Shelf (PV Shelf), creating a large lagoon/estuary system. Prehistoric sites may, therefore, be located on submerged landforms or exposed on bedrock outcroppings such as the SP Shelf or PV Shelf (Macfarlane Archaeological Consultants 1991:3).

Additional authors (Pierson 1980:16; Schwartz 1983; Pierson et al. 1987; Macfarlane Archaeological Consultants 1991) offer an expanded analysis of the potential for inundated prehistoric sites in or near Los Angeles Harbor. These authors indicate that there is likelihood for prehistoric deposits between the present shoreline and the shoreline of 8,500 BP (18 meters [approximately 60 feet] below present sea level), although most sites undergoing erosion in this zone would result in reworked artifacts offshore. Studies also indicate a likelihood of prehistoric deposits between the 8,500 BP (18 meters [approximately 60 feet] below present sea level) and 11,000 BP (46 meters [approximately 150 feet] below present sea level) shoreline. "However, fewer of the landforms selected for settlement by prehistoric peoples survive in this zone than in the 18 m – 0 m zone…due to extensive erosion that occurred during the slow sea level rise between 10,000 – 8,500 B.P." (Pierson et al. 1987:99) Submerged prehistoric resources at these depths may include *in-situ* sites, watercraft, or isolated artifacts left behind from early human activities or relic landforms (i.e., landforms that were of specific use or interest to prehistoric peoples).

7.2.1.5 Historic Terrestrial Setting

Although the southern coastal region of California had been inhabited by Native Americans for millennia, California was not known to Europeans until 1542, when it was visited by Cabrillo. The San Diego area was the original center of Spanish settlement, but by 1769, explorers such as Gaspar de Portola had entered the Los Angeles Basin in search of the best route to Monterey, where a mission was to be established. Near one of the spots where Portola had camped, the Mission San Gabriel was established in 1771.

In the years following the establishment of the mission, several homesteads with adobe structures were established throughout the area, and El Pueblo de Nuestra Señora la Reina de Los Angeles de Porciunula (the Town of Our Lady the Queen of Angels of the Little Portion) was founded in 1781. Los Angeles began to grow and became the center of the settlements of the Spanish aristocracy. The surrounding land throughout the Los Angeles Basin was divided into numerous Spanish and Mexican land grant ranchos. Many of the ranchos were later subdivided or portions of them were sold, and these subdivisions often grew into thriving communities that exist to the present.

The establishment of several industries in the Los Angeles region in the late 19th and early 20th century (most notably the oil, agriculture, and motion picture industries) has fueled the growth of the greater Los Angeles area into an extensively developed urban area (Jones & Stokes 1994:16-3).

7.2.1.6 Historic Maritime Setting

The remains of thousands of historic and modern vessels lie offshore of North America on the Outer Continental Shelf (OCS) and in the shallow waters adjacent to the modern shoreline. The waters off Los Angeles County have a long maritime history beginning with the use of reed and plank canoes by the Gabrielino Indians. The first historic maritime use of Los Angeles Harbor began in 1542, with the voyage of Cabrillo and extends through the 21st century. A summary of the maritime history for the Los Angeles and Southern California area is included in Table 7-4.

Table 7-4. Southern California Maritime History

Period	Vessels	Characteristics
Pre-Columbian times	Indigenous reed and plank canoes; Japanese fishing vessels	▪ The first non-indigenous seafarers arrive at the West Coast from Asia ▪ Japanese fishing vessels, damaged and adrift on the Japanese current, may have subsequently wrecked along the west coast of North America (Pierson et al. 1987:79)
1542	Spanish exploratory vessels	▪ Spanish exploratory expedition (led by Juan Rodriguez Cabrillo) sailed into San Pedro Bay (Weinman and Stickel 1978:25)
1565	Spanish vessels (commonly referred to as "Manila galleons")	▪ Spanish initiated trading voyages between Manila (in the Philippines) and Acapulco, Mexico ▪ Route followed the Japanese Current from Manila to North America, passing Los Angeles Harbor to Acapulco; vessels returning to Manila followed the North Equatorial Current ▪ Spanish sailed this circuitous route annually for the next 250 years (Pierson et al. 1987:80)
Spanish colonial period (1769–1818) and Mexican colonial period (1818–1846)	Hispanic vessels	▪ Only Hispanic vessels allowed in California waters due to reactionary political practices ▪ Foreign trade vessels allowed to bring in manufactured goods in exchange for furs and cowhides during the later part of these periods (Pierson et al. 1987:82)
Mexican-American War of 1846 and the Gold Rush of 1849	Clipper ships and side-wheel steamboats	▪ Maritime trade of California expanded rapidly ▪ The population of Southern California grew ▪ Manufacturing, mining, agriculture, and fishing industries replaced the California livestock-raising economy (and to some degree the fur trade) ▪ Ships of all kinds from all over the world brought goods and distributed California products to ports worldwide (Pierson et al. 1987:82)
19th century	Steam-powered vessels	▪ Maritime trade in and out of Los Angeles Harbor continued to grow as the 19th century progressed ▪ To accommodate growth, Point Fermin lighthouse was authorized in 1858, although construction did not take place until 1874 (Schwartz 1983:15) ▪ Construction of the Los Angeles Harbor breakwater authorized in 1896, began in 1899, and was completed in 1912 (Schwartz 1983:17) ▪ Sailing vessels replaced toward the end of the 19th century as technological advancements in shipbuilding increased ▪ Shipbuilding in California increased; most yards were located in San Francisco and Humboldt Bay where wood resources were more prevalent (Hall 1974:131-132)
20th century	All types of watercraft	▪ Waterborne traffic increased after World War I ▪ Los Angeles Harbor surpassed San Francisco for trade using the Panama Canal in 1923 (Schwartz 1983:19) ▪ 20th century progressed and the growth of Los Angeles Harbor continued, including the construction of container terminals as well the use of bulk loaders and supertankers (Schwartz 1983:24)

Shipwrecks off the Southern California coast, in varying states of preservation, represent hundreds of years of history because of the lengthy Southern Californian coast historical maritime period. It has been estimated that there are "upwards of 100 wrecks in the harbors [Los Angeles and Long Beach], which vary in age from significant old wrecks to culturally insignificant modern wrecks" (Weinman and Stickel 1978:76). Approximately 415 vessel losses have been reported within Los Angeles County by the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), and 156 vessel losses have been identified within Los Angeles County by the California State Lands Commission (CSLC) database (see Section 7.4.1.2 for more information on each of these databases). Only a small fraction of these wrecks has ever been located. A number of reported vessels lost off Los Angeles County are reported to be in excess of 400 feet in length and are primarily freighters and tankers (CSLC 2011). Title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the state and under the jurisdiction of the CSLC.

Besides traditional vessel losses, two other types of shipwrecks have added to the number of vessels sunk off Los Angeles County – the Hollywood Navy and the United States (U.S.) Navy's Pacific Fleet. The Hollywood Navy is a collection of deactivated ships, purchased and sunk at various times during the production of motion pictures. In addition, the U.S. Navy has, over the years, used many retired warships for gunnery target practice off Los Angeles County (Pierson et al. 1987:84). Other types of historic resources may also potentially exist in the offshore environment, including downed airplanes, anchors, navigational aids, and other isolated finds.

7.2.2 Program Setting

An archival records search was conducted at the South Central Coastal Information Center of the California Historical Resources Information System located at California State University, Fullerton, on March 2, March 3, and March 16, 2010, to identify previously recorded archeological cultural resources and historical buildings within 0.5 mile of the program elements. The records search included a review of federal, state, and local historic registers. Previous architectural historical resources surveys and inventories in the area were consulted. The results of the record searches provide background research for the existing program setting and are summarized below.

Conveyance System

The conveyance system is located throughout the Los Angeles Basin. Generally, the conveyance system is located within the thick alluvial deposits from the nearby hills and mountains. The depth of the conveyance system is generally between 5 and 25 feet below ground surface (bgs); therefore, it would be encompassed within deposits of older Quaternary alluvium, which can contain significant paleontological resources and fossils. Excavation for underground utilities in the past has recovered fossil and human remains, such as the Los Angeles Man, recovered during shallow storm drain trenching in the Ballona Creek area of West Los Angeles in 1936.

San Jose Creek Water Reclamation Plant

The San Jose Creek Water Reclamation Plant (SJCWRP) is situated adjacent to the junction of the San Gabriel River and San Jose Creek, and is bisected by Interstate (I-) 605 and is adjacent to State Route (SR-) 60. The former Southern Pacific Railroad, which is now part of the Union Pacific Railroad, is a cultural resource recorded within 0.5 mile of the SJCWRP. The San Gabriel River and San Jose Creek are now confined by riprap dike structures and concrete retaining walls for flood control. Younger alluvial deposits are likely to be deep in this geomorphic setting. The parcel has undergone grading and excavation for construction of the existing plant facilities and for channelization of the adjacent streams.

Pomona Water Reclamation Plant

The Pomona Water Reclamation Plant (POWRP) is situated at the base of the northeast side of Elephant Hill (a small, 1,145-foot-high hill) adjacent to the former Southern Pacific Railroad. A National Register of Historic Places (NRHP)-listed landmark, Phillips Mansion, is located across the railroad tracks at 2640 Pomona Boulevard within 1 mile of the POWRP. The POWRP is situated on alluvial fan surfaces at the base of the north east side of Elephant Hill. Bedrock is shallow in the POWRP area, although the POWRP itself is sited on graded alluvial material, which was leveled for construction of the existing plant facilities. A prehistoric archaeological site, CA-LAN-883, has been recorded on the southern slope of Elephant Hill, approximately 1,800 feet from the POWRP.

Los Coyotes Water Reclamation Plant

The Los Coyotes Water Reclamation Plant (LCWRP) is situated adjacent to the Ironwood Golf Course and the San Gabriel River, near the junction of I-605 and SR-91. The San Gabriel River is now confined to a concrete-lined flood control channel. Younger alluvial deposits are likely to be deep in this geomorphic setting. The LCWRP parcel has undergone grading and excavation for construction of the existing plant facilities and for channelization of the adjacent stream.

Long Beach Water Reclamation Plant

The Long Beach Water Reclamation Plant (LBWRP) is situated near the junction of the San Gabriel River and Coyote Creek. Both streams are now confined to concrete channels. Younger alluvial deposits are likely to be deep in this geomorphic setting. The LBWRP parcel has undergone grading and excavation for construction of the existing plant facilities and for channelization of the adjacent streams.

Joint Water Pollution Control Plant

The JWPCP is situated adjacent to I-110. The natural movement of the Los Angeles River channel, coupled with springs and upwelling, resulted in a system of small creeks, wetlands, and lakes in this area. A portion of this system to the west of the JWPCP was channelized for flood control purposes into the Wilmington Drain, which extends south to Lake Machado at the Ken Malloy Harbor Regional Park. Younger alluvial deposits are likely to be deep in this geomorphic setting. The JWPCP parcel has undergone grading and excavation for construction of the existing plant facilities.

7.2.3 Project Setting

An archival records search was conducted at the South Central Coastal Information Center of the California Historical Resources Information System located at California State University, Fullerton, on March 2, March 3, and March 16, 2010, to identify previously recorded archeological cultural resources and historical buildings within 0.5 mile of the project elements. The records search included a review of federal, state, and local historic registers. Previous architectural historical resources surveys and inventories in the area were consulted. The results of the record searches provide background research for the existing project setting and are summarized in this section.

7.2.3.1 Sanitation Districts' Existing Ocean Discharge System

The Sanitation Districts of Los Angeles County (Sanitation Districts) operate and maintain the existing ocean discharge system near Whites Point on the Palos Verdes Peninsula in San Pedro. As described in Chapter 2, the existing ocean discharge system extends from the JWPCP to the Pacific Ocean and consists of two parallel tunnels, four separate ocean outfalls, and four sets of diffusers. The four ocean outfalls are constructed of reinforced concrete, and each pipe varies in diameter and length. Three of the ocean outfalls are more than 50 years old; the fourth is 45 years old.

As shown in Table 2-7, the first 8-foot-diameter tunnel and the 60-inch-diameter ocean outfall were completed in 1937. After the significant Southern California population increase following World War II (WWII), the expansion of the ocean discharge system became necessary. In 1947, the second ocean outfall, 72 inches in diameter, was constructed. The first of four sections of the second 12-foot-diameter tunnel was constructed in 1949. By 1958, the fourth section of the 12-foot tunnel and the manifold structure at Royal Palms Beach were constructed and placed into operation. The third ocean outfall, 90 inches in diameter, was placed in operation in 1957, and the fourth ocean outfall, 120 inches in diameter, was placed in operation in 1966. (Parsons 2011:1-1; Powell and Van Heuit 1968:1900).

The Sanitation Districts commissioned a study (White et al.; included as Appendix 7-A) to identify all potentially significant cultural resources situated within the boundaries of the area of potential effects (APE) and to determine if the rehabilitation of the existing ocean outfalls, which is a portion of every project alternative, could result in adverse effects upon these resources.

7.2.3.2 Tunnel Alignments

Wilmington to San Pedro Shelf Alignment (Onshore)

The onshore portion of the Wilmington to SP Shelf tunnel alignment would be bored between approximately 100 to 200 feet bgs (as measured from the tunnel crown). The geologic formations crossed by this tunnel alignment would include the Pleistocene Lakewood Formation, San Pedro Sand, Timms Point Silt, and deposits of unconsolidated sand and silt. These are sedimentary deposits of unconsolidated sand and silt derived from near shore, marine and non-marine deposits, including beach, estuary, tidal flat, lagoon, shallow-water bay, and shoreline terrace deposits (ICF 2009:3.5-1).

Wilmington to San Pedro Shelf Alignment (Offshore)

The offshore portion of the Wilmington to SP Shelf tunnel alignment would be bored between approximately 100 to 200 feet bgs or below the seafloor (as measured from the tunnel crown). The tunnel alignment would extend through the geologic Miocene Monterey Formation. This formation consists of marine sedimentary rock deposits of mudstone, shale, and fine-grained rock.

Wilmington to Palos Verdes Shelf Alignment (Onshore and Offshore)

The geologic formations of the Wilmington to PV Shelf onshore and offshore tunnel alignment are the same as for the onshore and offshore portions of the Wilmington to SP Shelf tunnel alignment. The onshore portion of the Wilmington to PV Shelf tunnel alignment would be bored between approximately 100 to 200 feet bgs (as measured from the tunnel crown). The offshore portion of the Wilmington to PV Shelf tunnel alignment would be bored between approximately 100 to 250 feet bgs or below the seafloor (as measured from the tunnel crown).

Figueroa/Gaffey to Palos Verdes Shelf Alignment (Onshore and Offshore)

The onshore portion of the Figueroa/Gaffey to PV Shelf tunnel alignment would be bored between approximately 70 to 370 feet bgs (as measured from the tunnel crown). The offshore portion would be bored approximately 100 to 250 feet bgs or below the seafloor (as measured from the tunnel crown). The geologic formations of the onshore and offshore portions of this tunnel alignment are similar to the onshore and offshore portions of the Wilmington to SP Shelf alignment.

Figueroa/Western to Royal Palms Alignment (Onshore)

The onshore portion of the Figueroa/Western to Royal Palms tunnel alignment would be bored between approximately 70 to 450 feet bgs (as measured from the tunnel crown), except at the Royal Palms shaft

site where the tunnel crown depth would be approximately 30 feet bgs. The geologic formations of this tunnel alignment are similar to the onshore portion of the Wilmington to SP Shelf alignment.

7.2.3.3 Shaft Sites

JWPCP East

The JWPCP East shaft site is situated within the JWPCP property. Younger alluvial deposits are likely to be deep in this geomorphic setting, overlying Holocene-Age Lakewood Formation sediments due to the fact that this shaft site is situated within a tributary of the Wilmington Drain. The JWPCP East shaft site has undergone grading and excavation for construction and removal of oil wells and tanks once present on the parcel.

JWPCP West

The JWPCP West shaft site is situated within the JWPCP property, adjacent to I-110. Younger alluvial deposits are likely to be deep in this geomorphic setting, overlying Holocene-Age Lakewood Formation sediments due to the fact that this shaft site is within the former flood channel and wetlands now known as the Wilmington Drain. The JWPCP West shaft site has undergone grading and excavation for construction and removal of oil wells and tanks once present on the parcel.

TraPac

The Trans Pacific Container Service Corporation (TraPac) shaft site is situated in the TraPac container facility, adjacent to Harry Bridges Boulevard and a rail line. Vacant lots abut the TraPac shaft site to the north of Harry Bridges Boulevard. Several blocks to the east of the site, the records search identified an NRHP-eligible Los Angeles Department of Water and Power steam plant containing an Art-Deco style main building (19-188178) and the Union Oil Refinery (Ca-LAN-2135H). The shaft site is located near the original shoreline of Los Angeles Harbor on Holocene-Age beach sediments underlain by Holocene-Age Lakewood Formation sediments and the San Pedro Sand. These naturally deposited beach sands and muds are overlain by artificial fill. The TraPac shaft site has undergone grading for construction of the adjacent railroad and the existing container terminal.

LAXT

The Los Angeles Export Terminal (LAXT) shaft site is located on Terminal Island on Ferry Street, across from the city of Los Angeles Terminal Island Water Reclamation Plant. The shaft site is located on the western portion of the former Petroleum Coke Storage and Reclaim Facility site. The shaft site would be on an undeveloped area adjacent to railroad tracks maintained by the Port of Los Angeles, a bridge structure, and LAXT structures. The LAXT structures are being demolished by the port and would be gone prior to the start of project construction.

The LAXT shaft site is located on land built completely of artificial fill overlying Holocene-Age Lakewood Formation sediments. The LAXT shaft site has undergone extensive excavation, filling, and grading for construction of the former Petroleum Coke Storage and Reclaim Facility site.

Southwest Marine

The Southwest Marine shaft site is adjacent to the Main Channel of the Los Angeles Harbor. The NRHP-eligible Bethlehem Shipyard Historic District, formerly a WWII-era shipbuilding facility, is located adjacent to the shaft site. The shaft site would be located to the south of the existing Southwest Marine shipbuilding warehouses at the Port of Los Angeles and east of the basins at Berths 243–245. In the Architectural Survey and Evaluation of the Southwest Marine Terminal (Berth 240) of the Port of Los Angeles, ICF evaluated the Bethlehem Shipyard Historic District and determined it to be eligible for the

NRHP under Criterion A because of its association with the WWII emergency shipbuilding program (ICF 2000). The period of significance was established as 1941 to 1945, beginning with the time the site was first reconfigured to construct U.S. Navy destroyers and other vessels as part of the emergency shipbuilding program, and ending with the war's conclusion.

In 2008, the NRHP-eligible Bethlehem Shipyard Historic District was updated, and six buildings that had been contributors were found to have been demolished, although the district's historic integrity remained. The NRHP-eligible Bethlehem Shipyard Historic District is designated within the APE. (The APE is discussed in Sections 7.3.1.1 and 7.4.1.1.) Two additional built-environment resources that are eligible for the NRHP have been recorded within a 0.5-mile radius of the Southwest Marine shaft site (Building 10 on the U.S. Government Reservation and the Municipal Wholesale Fish Market across the Main Channel from the shaft site) but these sites are not included in the APE.

The Southwest Marine shaft site is located on land built completely of artificial fill, overlying Holocene sediment and Timms Point Silt. The Southwest Marine shaft site has undergone extensive excavation, filling, and grading for marine construction facilities on this built land.

Angels Gate

The Angels Gate shaft site is situated adjacent to Point Fermin Park on a portion of the former Fort MacArthur Military Reservation. A portion of Fort MacArthur on the Upper Reservation is listed in the NRHP as a historic district. A second historic district on the Upper Reservation is owned by the California Department of Parks and Recreation, and it is listed in the California Register of Historic Resources (CRHR). A third historic district on the Upper Reservation is on land owned by the Los Angeles Unified School District and was determined eligible for the CRHR. The Angels Gate shaft site is located outside the boundaries of these three historic districts.

An archaeological site (CA-LAN-144) has been recorded across the street from the Angels Gate shaft site in Point Fermin Park. However, the brief site record from 1912 also indicates that the shell material discovered at that time may be a modern accumulation (Nelson 1912). Also across the street from the Angels Gate shaft site is the Point Fermin Light House, which is on the NRHP.

This shaft site is located on the southern edge of the Palos Verdes Hills, adjacent to the Pacific Ocean. The Palos Verdes Hills consist of a Jurassic-Age metamorphic basement complex (Catalina Schist) that is overlain by about 3,000 feet of sedimentary rock formations of Miocene-Age Monterey Formation marine sedimentary rock, consisting of deposits of mudstone, shale, and fine-grained silts (Deméré 2007). Fossil localities are also locally common in the Monterey Formation (Deméré 2007). The shaft site is situated at the base of a hill on an uplifted wave cut terrace underlain by the Altamira Shale Member of the Monterey Formation. The Angels Gate shaft site has undergone grading for construction of an existing parking lot.

Royal Palms

The Royal Palms shaft site is located at the end of Kay Fiorentino Road in the community of San Pedro. A stone wall fragment with posts constructed prior to 1935 is located adjacent to the Royal Palms shaft site.

The record search identified CA-LAN-142, CA-LAN-143, CA-LAN-152, CA-LAN-1144, CA-LAN-1269, and CA-LAN-2211 within 0.5 mile of the shaft site. All of these recorded archaeological sites are located on the bluff top above and to the southeast of the Royal Palms shaft site.

The shaft site is situated on an uplifted wave cut terrace adjacent to the Pacific Ocean. The shaft site is situated at the base of a cliff underlain by the Altamira Shale Member of the Monterey Formation. The Royal Palms shaft site has undergone grading for construction of an existing parking lot, and extensive excavation for the Sanitation Districts' existing manifold structure and existing ocean outfalls.

7.2.3.4 Riser/Diffuser Area

San Pedro Shelf

The SP Shelf is an area of the OCS located offshore of Los Angeles County. Although no prehistoric sites are currently known on the SP Shelf, there is a potential for their existence based on the coastal characteristics, sea level changes, and activities of early humans (Weinman and Stickel 1978:76). If prehistoric sites or resources do exist on the SP Shelf, they are likely buried under sediment due to changing sea levels over time and dynamic shelf morphology. Prehistoric sites are more likely to be found on the SP Shelf at shallow depths. There is a slightly greater probability of finding isolated artifacts rather than prehistoric sites at a depth of 200 feet. However, their locations generally cannot be predicted. These artifacts are typically randomly deposited and left from accidental loss or ceremonial activities, or are uncovered due to erosion. Examples of isolated artifacts found off Southern California include a diving weight stone recovered 100 kilometers (approximately 62 miles) offshore at a depth exceeding 3,600 meters (approximately 11,800 feet), a refined stone milling device recovered from 200 meters (approximately 650 feet) south of Santa Rosa Island, and large stone mortars found offshore of La Jolla and Del Mar in San Diego County (Pierson et al. 1987: 98-99).

The general approach to Los Angeles Harbor is over the SP Shelf. Many historic vessels traversed this area, and numerous vessels are known to have sunk on the SP Shelf. While the locations of many wrecks are known, no known wrecks are located within close proximity of the riser and diffuser area.

Palos Verdes Shelf

The PV Shelf exhibits the same geomorphologic characteristics as the SP Shelf. Therefore, the potential to find prehistoric resources on the PV Shelf is the same as on the SP Shelf. A number of shipwrecks are located on the PV Shelf. The closest wrecks to the riser and diffuser location include the *Benita* (sunk in 1951) and the *Nelson* (sunk 1936). Both the *Benita* and *Nelson* are reported lost on the PV Shelf (in approximately 100 to 150 feet of water).

Existing Ocean Outfalls

The existing ocean outfalls are located on the PV Shelf. Three shipwreck sites are reported at or near the existing ocean outfalls. The CSLC Shipwreck database indicates these are the reported wrecks of the *San Ubaldo*, the *Saint Joseph*, and the *Melrose* (CSLC 2011). Very little is known about the *San Ubaldo* other than it was sunk in 1926. The year the vessel was built is unknown. The plotted location of the wreck is in 30 fathoms of water (180 feet) within 1,000 feet of the existing ocean outfalls although this location has not been confirmed. Very little is known about the *Saint Joseph* other than it was a 60-ton motor vessel that sank in 1975. The unsubstantiated wreck location is in 20 fathoms of water (120 feet) approximately 2,600 feet east northeast of the outfalls. The *Saint Joseph* is not a historically significant shipwreck because it is considered modern based on the sink date. The *Melrose* was a 274-foot double-ended ferry owned by the Southern Pacific and built in the early 1900s. The 2,662 ton vessel had a 43-foot beam and sank in shallow water during a storm in April 1932 (cawreckdivers.org 2011a). The plotted location of this wreck site (from coordinates provided by the CSLC Shipwreck database) indicates it is located in shallow water near the existing ocean outfalls.

7.3 Regulatory Setting

Cultural resources include prehistoric archaeological sites, historic archaeological sites, traditional cultural properties, and historic buildings and structures. This section discusses the applicable federal and state laws and regulations that protect cultural resources, including Section 106 of the National Historic Preservation Act (NHPA) and California Public Resources Code Sections 5024.1 and 21084.1, and assesses the potential for program and project elements to have impacts on these resources. Paleontological resources are resources in the fossil record, such as prehistoric remains and other evidence of past life. While paleontological resources are not subject to Section 106 of the NHPA, destruction of a "unique paleontological resource or site or unique geologic feature" constitutes a significant impact under the California Environmental Quality Act (CEQA) (CEQA Guidelines Appendix G, Section V.e.).

7.3.1 Federal

7.3.1.1 National Historic Preservation Act (16 USC Section 470 et seq. and 36 CFR Section 800)

The NHPA (16 United States Code [USC] Section 470 et seq.) established a national program to preserve the country's historical and cultural resources. Section 106 of the NHPA requires federal agencies to consider the effects of their actions on historic properties and provide the President's Advisory Council on Historic Preservation an opportunity to comment on a proposed action before it is implemented. Regulations for implementing the Section 106 process are provided in 36 Code of Federal Regulations (CFR) Section 800. Both state and federal guidelines for cultural resources recognize that buildings, structures, objects, districts, and cultural landscapes can be historically significant. The NHPA refers to these significant resources as historic properties, while under CEQA, such highly sensitive resources are referred to as historical resources. Under NHPA Section 106 (36 CFR Section 800.16), a historic property is "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places [NRHP]." To be eligible for the NRHP, these property types must meet at least one of the NRHP significance evaluation criteria (36 CFR Section 60.4) to be considered a historic property, and the property must also possess integrity. NRHP historic properties meet one or more of the following evaluation criteria:

- The property is associated with events that have made a significant contribution to the broad patterns of our history (Criterion A).
- The property is associated with the lives of persons significant in our past (Criterion B).
- The property embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction (Criterion C).
- The property has yielded, or may be likely to yield, information important to prehistory or history (Criterion D).

The U.S. Army Corps of Engineers (Corps) is the federal agency responsible for identifying buildings, structures, sites, objects, and districts that are listed in or eligible for listing in the NRHP. The Corps is responsible for compliance with Section 106 of the NHPA as a part of its permitting process of the program. In accordance with 36 CFR Section 800.4(a)(1), the Corps must determine and document an APE.

The term APE is specifically drawn from the Advisory Council on Historic Preservation's federal regulations implementing Section 106 and is defined as follows:

> Area of Potential Effects means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by an undertaking.

The APE is also defined by 33 CFR Part 325, Appendix C, which is used to determine the permit area. The APE for the project elements is defined in Section 7.4.1. Adverse changes to historic properties and historical resources caused by an undertaking are described as adverse effects under Section 106, and as adverse changes or adverse impacts under CEQA. The definition of effect for the purposes of Section 106 of NHPA is contained within 36 CFR Section 800.16 (i): "Effect means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." An adverse effect occurs "when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association…. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative." Examples of adverse effects may include, but are not limited to, destruction, damage, alteration, or relocation of a historic property, as well as the introduction of elements that diminish the property's integrity, cause neglect of a property, or its transfer out of federal ownership.

7.3.1.2 Abandoned Shipwrecks Act

The Abandoned Shipwrecks Act (43 USC 2101) of 1987 was signed into law by President Reagan on April 28, 1988. Under the act, the U.S. Government claimed title to three categories of abandoned shipwrecks:

- Abandoned shipwrecks embedded in a state's submerged lands
- Abandoned shipwrecks embedded in corraline formations protected by a state on its submerged lands
- Abandoned shipwrecks located on a state's submerged lands and included in or determined eligible for inclusion in the NRHP

This act gave the title of certain shipwrecks located in state waters (within 3 nautical miles in California) to the state. The BOEMRE oversees the protection of shipwrecks that are located beyond the 3-mile limit but still on the OCS. The act also stipulated that states have management authority over those certain abandoned shipwrecks. The U.S. government maintained its title to shipwrecks located in or on public lands under this act. In addition, the act stipulates that title to any shipwreck found in or on Indian lands was to be retained by that respective Indian tribe.

7.3.2 State

7.3.2.1 Submerged Lands Act

The Submerged Lands Act (43 USC Sections 1301–1315, May 22, 1953, as amended 1986) gives coastal states title to all offshore lands within their historic boundaries (typically up to 3 nautical miles from the coastline). This includes the rights all natural resources on or within those lands. The U.S. government

does, however, maintain the rights to regulate offshore activities for national defense, international affairs, navigation, and commerce.

7.3.2.2 California Register of Historical Resources

Under CEQA, significant cultural resources are called historical resources whether they are of historic or prehistoric age. Historical resources are resources that are listed or eligible for listing in the CRHR, that are listed in the historical register of a local jurisdiction (county or city), or that are identified as significant in a historical resources survey meeting the requirements in Public Resources Code (PRC) Section 5024.1(g). NRHP historic properties located in California are considered historical resources for the purposes of CEQA and are also automatically listed in the CRHR (PRC Section 5024.1). Generally, a resource should be considered a historical resource for the purposes of CEQA if it has integrity and meets one or more of the criteria for listing in the CRHR (CEQA Guidelines Section 15064.5[a][3]). These state criteria are based on, and are very similar to, federal significance criteria:

- The resource is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage (Criterion 1).
- The resource is associated with the lives of persons important in California's past (Criterion 2).
- The resource embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values (Criterion 3).
- The resource has yielded, or may be likely to yield, information important in prehistory or history (Criterion 4).

The NRHP and CRHR criteria are almost identical. Any resource determined eligible for NRHP is also automatically eligible for CRHR. However, the term historical resources under CEQA and CRHR is more inclusive because resources listed in local historical registers or in local historical surveys that meet Office of Historic Preservation standards are encompassed.

Impacts on historical resources meeting the criteria in Section 15064.5(a) of the CEQA Guidelines constitute a significant effect on the environment (significant impacts that must be disclosed in a CEQA environmental document) if the impact constitutes a substantial adverse change in the significance of a historical resource (PRC Section 21084.1). A substantial adverse change in the significance of a historical resource under CEQA includes "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines Section 15064.5[b][1]). Material impairment includes changes to the physical characteristics that make a historical resource eligible for listing in the CRHR such that the resource would no longer be eligible for the CRHR or a local historical register (CEQA Guidelines Section 15064.5[b][2]).

7.3.2.3 State Health and Safety Code Section 7050.5 and Public Resources Code 5097.98

These legal requirements outline the appropriate procedures to follow should human remains be identified during construction activities in the state of California. These codes call for construction to stop and no further disturbance to occur, and for the county coroner to be contacted for an evaluation of the remains. The county coroner will determine the origin and disposition of the human remains. If the coroner recognizes the remains to be Native American, he or she will contact the California Native American

Heritage Commission (NAHC) within 24 hours. For remains of Native American origin, no further excavation or disturbance will take place until the most likely descendant of the deceased Native American has made a recommendation to the landowner or the person responsible for the excavation work regarding means of treating or disposing of the human remains and any associated grave goods, with appropriate dignity, as provided in PRC Section 5097.9. In consultation with the most likely descendant, the project archaeologist and the project proponent will determine a course of action regarding preservation or excavation of Native American human remains, and this recommendation will be implemented expeditiously. If the NAHC is unable to identify a most likely descendant or the descendant fails to make a recommendation within 48 hours after being notified by the commission, the project archaeologist and the project proponent will determine a course of action regarding preservation or excavation of Native American human remains, which will be submitted to the NAHC for review prior to implementation.

7.3.3 Local

7.3.3.1 Archaeology and Historical Architectural Resources

City guidelines for the protection of archeological resources are set forth in Section 3 of the city of Los Angeles general plan conservation element, which, in addition to compliance with CEQA, requires the identification and protection of archaeological sites and artifacts as a part of local development permit processing. Specifically, Los Angeles Municipal Code Section 91.106.4.5 states that the building department:

> shall not issue a permit to demolish, alter or remove a building or structure of historical, archaeological or architectural consequence if such building or structure has been officially designated, or has been determined by state or federal action to be eligible for designation, on the National Register of Historic Places, or has been included on the City of Los Angeles list of historic cultural monuments, without the department having first determined whether the demolition, alteration or removal may result in the loss of or serious damage to a significant historical or cultural asset. If the department determines that such loss or damage may occur, the applicant shall file an application and pay all fees for the California Environmental Quality Act Initial Study and Check List, as specified in Section 19.05 of the Los Angeles Municipal Code. If the Initial Study and Check List identify the historical or cultural asset as significant, the permit shall not be issued without the department first finding that specific economic, social or other considerations make infeasible the preservation of the building or structure.

Five types of historic protection designations apply in the city: (1) historic-cultural monument designation by the Los Angeles Cultural Heritage Commission and approved by the city council; (2) placement on the CRHR; (3) placement on the NRHP (1980 NHPA); (4) designation by the Community Redevelopment Agency as being of cultural or historical significance within a designated redevelopment area; and (5) classification by the city council (recommended by the planning commission) as a historic preservation overlay zone (HPOZ). These designations help protect structures and support rehabilitation fund requests (City of Los Angeles 2001a).

The significance of a historical resource is based on whether the resource:

1. Has been coded by the Department of Building and Safety with a Zoning Instruction number in the 145 series (indicating prior identification of the property as historic)

2. Has been classified as historic in a historical resources survey conducted as part of updating the community plan, the adoption of a redevelopment area, or other planning project
3. Is subject to other federal, state, or local preservation guidelines
4. Has a known association with an architect, master builder, or person or event important in history such that the resource may be of exceptional importance
5. Is over 50 years old and a substantially intact example of an architectural style significant in Los Angeles (City of Los Angeles 2006)

7.3.3.2 City of Los Angeles Historic-Cultural Monument Designation

In the city of Los Angeles, the Los Angeles Cultural Heritage Commission, established by ordinance in 1962, may designate resources as historic-cultural monuments under Los Angeles Administrative Code Sections 22.120, et seq. A historical or cultural monument is defined as:

> Any site (including significant trees or other plant life located thereon), building or structure of particular historic or cultural significance to the City of Los Angeles, such as historic structures or sites in which the broad cultural, political, economic or social history of the nation, state or community is reflected or exemplified, or which are identified with historic personages or with important events in the main currents of national, state or local history, or which embody the distinguishing characteristics of an architectural-type specimen, inherently valuable for a study of a period style or method of construction, or a notable work of a master builder, designer, or architect whose individual genius influenced his age.

The Los Angeles Cultural Heritage Commission has designated over 900 sites as historic-cultural monuments, including historic buildings, corridors (tree-lined streets), and geographic areas. Historical resources may also include resources listed in the State Historic Resources Inventory as significant at the local level or higher, and those evaluated as potentially significant in a survey or other professional evaluation. (City of Los Angeles 2001b.)

7.3.3.3 City of Los Angeles Historic Preservation Overlay Zones

The HPOZ provision of the Los Angeles Municipal Code (Los Angeles Municipal Code Section 12.20.3) was adopted in 1979 and amended in 2001. As defined in Section 12.20.3.B.17 of the Los Angeles Municipal Code, a preservation zone is "any area of the City of Los Angeles containing buildings, structures, landscaping, natural features, or lots having historic, architectural, cultural, or aesthetic significance and designated as a HPOZ under the provisions of this section." Subsection 12.20.3 of the Los Angeles Municipal Code requires that a historical resources survey be prepared, identifying all contributing and noncontributing elements.

Under the HPOZ provision, to be significant, structures, natural features, or sites within the involved area or the area as a whole would meet one or more of the following criteria:

(A) Have substantial value as part of the development, heritage, or cultural characteristics of, or are associated with the life of a person important in the history of the city, state, or nation

(B) Are associated with an event that has made a substantial contribution to the broad patterns of our history

(C) Are constructed in a distinctive architectural style characteristic of an era of history

(D) Embody those distinguishing characteristics of an architectural type or engineering specimen

(E) Are the work of an architect or designer who has substantially influenced the development of the city

(F) Contain elements of design, details, materials, or craftsmanship that represent an important innovation

(G) Are part of or related to a square, park, or other distinctive area and should be developed or preserved according to a plan based on a historic, cultural, architectural, or aesthetic motif

(H) Represent an established feature of the neighborhood, community, or city owing to unique location or singular physical characteristics

(I) Preserve and protect a historic place or area of historic interest in the city

A contributor is "any building, structure, landscaping, [or] natural feature identified on the Historic Resources Survey as contributing to the historic significance of the HPOZ, including a building or structure which has been altered, where the nature and extent of the alterations are determined reversible by the Historic Resources Survey" (Los Angeles Municipal Code Section 12.20.3 B.6). The following criteria set forth in subsection 12.20.3 F.3(c)(1)-(3) of the Los Angeles Municipal Code determine if a resource is a contributor.

1. Adds to the historic architectural qualities or historic associations for which a property is significant because it was present during the period of significance and possesses historic integrity reflecting its character at that time
2. Represents an established feature of the neighborhood, community, or city owing to its unique location or singular physical characteristics
3. Contributes to the preservation and protection of a historic place or area of historic interest in the city

7.3.3.4 L.A. CEQA Thresholds Guide

The L.A. CEQA Thresholds Guide (City of Los Angeles 2006) sets forth specific thresholds to be used in determining the significance of cultural resource impacts. These thresholds are grouped under three topics: paleontological resources, archaeological resources, and historical resources.

- A project would have a significant impact on paleontological resources if it results in the permanent loss of, or loss of access to, a paleontological resource of regional or statewide significance
- An impact on archaeological resources would be considered significant if it would disturb, damage, or degrade an archaeological resource or its setting that is found to be important under the criteria of CEQA because it:
  - Is associated with an event or person of recognized importance in California or American history or of recognized scientific importance in prehistory
  - Can provide information which is both of demonstrable public interest and useful in addressing scientifically consequential and reasonable archaeological research questions
  - Has a special or particular quality, such as the oldest, best, largest, or last surviving example of its kind

  - Is at least 100 years old and possesses substantial stratigraphic integrity
  - Involves important research questions that historical research has shown can be answered only with archaeological methods
- An impact on historical architectural resources would be considered significant if it would result in a substantial adverse change that would impair the significance of a historical resource that is found to be important because it:
  - Is associated with an event or person of recognized importance in California or American history
  - Has associations with an architect, master builder, or person or event important in history such that the resource may be of exceptional importance
  - Is over 50 years old and is a substantially intact example of an architectural style significant in Los Angeles
- A substantial adverse change in significance would occur if the project involves:
  - Demolition of a significant resource
  - Relocation that does not maintain the integrity and significance of a significant resource
  - Conversion, rehabilitation, or alteration that does not conform to the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings
  - Construction that reduces the integrity or significance of important resources on the site or in the vicinity

The L.A. CEQA Thresholds Guide was used in development of the thresholds for this analysis.

7.3.3.5 Ethnographic Resources

Relative to ethnographic resources, the L.A. CEQA Thresholds Guide (2006) states: "Consider compliance with guidelines and regulations such as the California Public Resources Code." No specific local regulations mandating the protection of ethnographic resources exist.

7.3.3.6 Paleontological Resources

City guidelines for the protection of paleontological resources are specified in Section 3 of the City of Los Angeles General Plan Conservation Element. The policy requires that the city's paleontological resources be protected for research and/or educational purposes. It mandates the identification and protection of significant paleontological sites and/or resources known to exist or that are identified during land development, demolition, or property modification activities.

7.3.3.7 City of Carson

The City of Carson General Plan Update was approved in 2004. City guidelines for the protection of historical resources are specified in the Parks, Recreation, and Human Services Element of the City of Carson General Plan, Chapter 9 (City of Carson 2004). The city of Carson has no local historic preservation ordinance.

7.3.4 Standards

Historic properties proposed for modification are evaluated using the Secretary of the Interior's standards for preservation, rehabilitation, restoration, and reconstruction.

7.3.4.1 Standards for Preservation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

7.3.4.2 Standards for Rehabilitation

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

7.3.4.3 Standards for Restoration

1. A property will be used as it was historically or be given a new use that reflects the property's restoration period.
2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period will not be undertaken.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Materials, features, spaces, and finishes that characterize other historical periods will be documented prior to their alteration or removal.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.
6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials.
7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.
8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
10. Designs that were never executed historically will not be constructed.

7.3.4.4 Standards for Reconstruction

1. Reconstruction will be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property.
2. Reconstruction of a landscape, building, structure, or object in its historic location will be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts that are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures will be undertaken.
3. Reconstruction will include measures to preserve any remaining historic materials, features, and spatial relationships.
4. Reconstruction will be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property will re-create the appearance of the non-surviving historic property in materials, design, color, and texture.
5. A reconstruction will be clearly identified as a contemporary re-creation.
6. Designs that were never executed historically will not be constructed.

7.4 Environmental Impacts and Mitigation Measures

7.4.1 Methodology and Assumptions

7.4.1.1 Terrestrial Cultural Resources

Impacts on cultural resources were evaluated by determining whether demolition or ground disturbance activities would affect areas that contain or could contain any archaeological or historical sites that are listed in or eligible for listing in the NRHP or the CRHR, that are designated as a city of Los Angeles historic-cultural monument, that are included within a city of Los Angeles HPOZ, or that are otherwise considered a unique or important archaeological resource under CEQA (City of Los Angeles 2006).

The CEQA study area evaluated for the program-level CEQA analysis is the footprint of each water reclamation plant (WRP) and the JWPCP because all construction and operation activities would be confined within each site. For historical architectural resources, the CEQA study area includes program elements that require the construction of new buildings or the modification of existing structures at the WRPs or the JWPCP. If existing buildings are over 50 years of age, they are evaluated as potential historical architectural resources. If the program elements do not include the construction of new buildings or the modification of existing structures at the WRPs or the JWPCP, there is no CEQA study area for historic architectural resources. Because the program has no National Environmental Policy Act (NEPA) element, there is no NEPA study area or APE.

For prehistoric or historic archeological resources, the CEQA study area includes program elements that require excavation or ground disturbance. The potential for the excavation or ground disturbance to have an impact on buried unknown significant archaeological resources is analyzed. If the program elements do not include excavation or ground disturbance, then there is no CEQA study area for prehistoric or historic archeological or paleontological resources.

The CEQA study area evaluated for the project-level CEQA analysis is identical to the federal APE as determined by the Corps (33 CFR Part 325 Appendix C). The NEPA study area is the same as the APE. In accordance with 36 CFR Section 800.4(a)(1), on February 12, 2010, the Corps made a preliminary determination and documented an APE on vicinity maps (Figures 3-16, 3-17, 3-18, 3-19, 3-20, 3-21, 3-22, and 3-23). The APE includes areas of ground disturbance at the shaft sites, the tunnel bore itself (but not the area above the tunnel), the riser/diffuser areas (also including the existing ocean outfalls), and the ocean dredged material disposal sites. Permanent visual effects associated with activities in these areas on proximate historic properties are also considered. Detailed magnetometer studies of the marine APE are only needed for the preferred alternative (see Section 7.4.1.2), including the direct construction area of the riser and diffuser and the portion of the existing ocean outfalls subject to rehabilitation actions. Incidental anchor drop locations are not included in the APE. The term APE is specifically drawn from the Advisory Council on Historic Preservation's federal regulations implementing Section 106 of the NHPA as described in Section 7.3.1.1. There is one NRHP-eligible property identified within the APE, described in detail in Section 7.2 of this chapter:

- Bethlehem Shipyard Historic District

As discussed in Section 7.2.3, the NRHP-eligible Bethlehem Shipyard Historic District is adjacent to the Southwest Marine shaft site. Impacts of construction and operation activities at this shaft site on the Bethlehem Shipyard Historic District are discussed in the analysis.

A field reconnaissance survey was conducted in January 2009. If a potential built environment resource was identified during the survey, further research was conducted. This research included:

- Sanitation Districts' archival photo collection
- Sanitation Districts' archival collection of historic articles and publications
- Sanborn fire insurance maps
- ProQuest historical newspapers: Los Angeles Times 1881 – December 31, 1985
- JSTOR and WorldCat academic databases
- Online Archive of California
- Los Angeles Public Library local history collection – photo database and California index

An archaeological and historic architectural resources field survey of the project elements (seven shaft sites) was completed in January 2009. The Angels Gate and Royal Palms shaft sites were re-examined on February 25, 2010.

7.4.1.2 Submerged Cultural Resources

Direct and indirect cultural resource impacts on submerged resources could occur due to the construction and operation of the riser and diffuser or the rehabilitation of the existing ocean outfalls. Direct cultural resource impacts would include damage caused by construction activities (i.e., dredging, placement of ground tackle) associated with the placement of the riser and diffuser. Indirect cultural resource impacts would include the inadvertent exposure or burial of submerged cultural resources. These direct and indirect impacts (which are in reference to cultural resource impacts) differ from those identified and defined by the Corps in Section 7.4.1.3 (which are in reference to federal regulations and responsibilities). The study area for submerged cultural resources includes those areas directly affected by activities associated with the construction and subsequent operation of the riser and diffusers. This may also

include areas surrounding the construction site such as mooring areas, wire drags, and any other direct impacts on the seafloor. Submerged cultural resources may be either prehistoric or historic.

Numerous sources were consulted to determine the location (or potential location) of submerged prehistoric and historic cultural sites and resources. These sources include:

- Consultation with the Corps
- Consultation with interested parties
- CSLC database for shipwrecks
- BOEMRE shipwreck database
- National Oceanic and Atmospheric Administration's (NOAA) Automated Wreck and Obstruction Information System (AWOIS) database
- Global Maritime Wrecks database (GMWD)
- NRHP database
- Previous cultural resource/geophysical surveys and inventories
- Secondary sources and avocational wreck diving websites
- Predictive modeling based on past research

Consultation With the Corps

On February 12, 2010, the Corps made a preliminary determination that the PV and SP Shelf riser and diffuser areas are not within the federal APE. However, to comply with Section 106 requirements of the NHPA, the Corps is requiring that additional detailed technical studies be performed once an alternative is selected by the Sanitation Districts. The additional studies may include, as feasible, detailed side-scan sonar and magnetometer studies for the selected alternative in locations of direct disturbance to the seafloor. The Corps is not requiring side-scan sonar and magnetometer studies of incidental anchor drop locations. The Corps will not issue the 404(b)(1) permit without compliance with Section 106 of the NHPA and the required additional studies. Therefore, the analysis assumes that the required additional studies will be performed as feasible.

Consultation With Interested Parties

Interested parties were consulted to gather information relative to known submerged cultural resources and the potential for such resources within the study area. This included individuals with an interest in the prehistory, history, and archaeology of the region. Such individuals included the state of California underwater archaeologist, private cultural resource managers, and other maritime archaeologists familiar with the area.

Shipwreck Database Review

A number of shipwreck databases were reviewed. Plotted positions of shipwreck sites are usually inaccurate because the coordinates are typically generated from multiple sources such as eyewitness accounts, secondary sources, and newspaper accounts; however, the databases do provide information on the shipwrecks and their general vicinity. The databases reviewed and the particular information associated with each database are shown in Table 7-5.

The four databases that were searched include the NOAA AWOIS database, the CSLC database for shipwrecks, the BOEMRE shipwreck database, and the GMWD. These databases provide information relative to known vessel losses, including vessel name, type, date built, date lost, and any other pertinent

information. The NOAA AWOIS database and CSLC shipwreck database are available to the general public and can be searched online. However, both the BOEMRE shipwreck database and GMWD are proprietary and are not available to the general public.

Table 7-5. Shipwreck Databases

Database	Locations Included	Notes
NOAA AWOIS	United States	This database, available to the public, contains information on over 10,000 shipwreck sites. Information on the database includes position (latitude/longitude), feature description, and any known historic and/or descriptive details. Position accuracy of AWOIS wrecks is highly variable and usually poor.
CSLC	State	This database, available to the public, is searchable by ship name, type, county, and location. The database provides information relative to known vessel losses including ship's name, type, year built, year sunk, cause, owner, captain, length, beam, tonnage, engine, county, and location within California state waters.
BOEMRE	United States	The database is searchable by state and county. This database includes vessel name, nationality, date built, date lost, vessel type, tonnage, county, depth lost, locational accuracy, lease number, wreck verification, and any additional information available relative to vessel losses. This database is not available to the general public.
GMWD	Worldwide	This proprietary database contains over 270,000 wrecks worldwide. The database includes wreck name, nationality, date of sinking, depth of wreck, vessel category, gross tons, sinking agent, nominal accuracy of wreck location, source of wreck, nationality of the vessel that sunk the wreck, and more.

In addition to these databases, the NRHP maintains a list of historic properties (including shipwrecks) that is searchable by state and county (National Park Service 2010).

Previous Cultural Resource/Geophysical Surveys and Previous Environmental Documentation

A variety of submerged cultural resource reports were reviewed relative to both offshore prehistoric and historic sites off Los Angeles County (Weinman and Stickel 1978; Pierson 1980; Schwartz 1983; Pierson et al. 1987; Macfarlane Archaeological Consultants 1991). In addition, a review of side-scan sonar data from a geophysical survey, conducted by Fugro West (2011), was also performed. This survey conducted by Fugro West collected side-scan sonar data over portions of the SP Shelf and PV Shelf. Side-scan sonar data can be useful by recording exposed features on the seafloor, some of which may be associated with submerged cultural resources. However, this geophysical survey did not incorporate the use of a magnetometer or sub bottom profiler (in addition to a side-scan sonar). These two instruments are typically used to locate submerged cultural resources and help to confirm the type of material identified by the side-scan sonar (e.g., metal, wood, other). Therefore, a complete analysis of the data collected by Fugro West, relative to submerged cultural resources, could not be made.

The effects of the Clearwater Program from excavated material (fill) disposal at LA-2 and LA-3 were evaluated previously in the Draft Environmental Impact Statement for the Proposed Site Designation of the LA-3 Ocean Dredged Material Disposal Site off Newport Bay, Orange County, California (LA-3 DEIS), prepared for the U.S. Environmental Protection Agency and the Corps, Los Angeles District (December 2004), and incorporated herein by reference. The Final Environmental Impact Statement for the Proposed Site Designation of the LA-3 Ocean Dredged Material Disposal Site off Newport Bay, Orange County, California, was adopted in September 2005. The LA-3 DEIS analyzed the impacts associated with the proposed designation of the LA-3 site as a permanent site for the ocean disposal of dredged material and the continued operation of LA-2 (also known as the LA-3 DEIS Preferred Alternative [Alternative 3]). The LA-3 site is used in conjunction with the LA-2 site for the disposal of

dredged material originating from projects located within Los Angeles and Orange Counties. The relevant analysis for the LA-3 DEIS Preferred Alternative included in the LA-3 DEIS and incorporated into this chapter is associated with cultural resources.[1]

Secondary Sources

A number of secondary sources were reviewed relative to submerged cultural resources off Los Angeles County. This includes shipwreck references (Marx 1971), dive site books (Cardone and Smith 1989), and professional journals. An avocational wreck diver website (Cawreckdivers.org 2011b) was also reviewed for known shipwrecks off Los Angeles County. Secondary sources can help provide information relative to known and potential submerged cultural resources within the region.

Predictive Models for Prehistoric and Historic Resources

Many prehistoric and historic submerged cultural resources are not identified or categorized in a database. Therefore, a methodology was developed to appropriately predict and analyze the likelihood of unknown prehistoric and historic submerged cultural resources within the study area. This methodology is discussed below.

A predictive model based on previous research and shelf characteristics was applied to each study area to analyze the potential locations of unidentified prehistoric sites and artifacts. This model depends upon numerous geologic and archaeological elements. The geologic elements include shelf morphology, post-Wisconsin erosional/depositional history of the coastal strip, and nearshore processes on various landforms during the Flandrian Transgression. Embayments, which evolved into estuaries and relic channels, have the highest potential for prehistoric sites and artifact deposits. The archaeological elements include how long humans have been present along the coast as well as land use and site distribution patterns (Pierson et al. 1987:92). There is a likelihood of prehistoric sites being found between the 8,500 BP shoreline (18 meters [approximately 60 feet] below present sea level) and the 11,000 BP shoreline (46 meters [approximately 150 feet] below present sea level). However, extensive erosion from 10,000 to 8,500 BP may have affected any potential deposits. The various predictive elements are analyzed to predict the occurrence of unrecorded in situ or reworked prehistoric archaeological deposits located within the study area.

A similar model was used to predict the location of unidentified historic shipwrecks. Typically, shipwrecks occur much closer to shore than in the open ocean. Researchers have assumed between 75 and 98 percent of all shipping losses in the western hemisphere through the 19th century occurred in less than 10 meters (approximately 32 feet) of water or very close to shore (Garrison et al. 1989: I-3). Furthermore, it is assumed where ship traffic is concentrated there are more vessel losses, especially when concentrated traffic occurs near navigational hazards such as islands, headlands, or submerged rocks. If these factors coincide with areas with a likelihood of foul weather or fog, an even greater frequency of accidents can be expected. However, wrecks may occur even where traffic is not concentrated or when

[1] The analysis regarding cultural resources is included in Chapter 4 of the LA-3 DEIS on pages 4-1 to 4-5 and 4-38. Additionally, the cumulative analysis for cultural resources associated with the LA-3 Preferred Alternative is included in Chapter 4 of the LA-3 DEIS on pages 4-76 to 4-79. Finally, the relationship between short-term and long-term resource use and the irreversible or irretrievable commitment of resources on page 4-80 to 4-81 is applicable. The analysis in the LA-3 DEIS is relevant to the Clearwater Program analysis because construction of the offshore tunnel in Alternatives 1 to 3 could require ocean disposal of the excavated material and would make use of either LA-3 or LA-2. The quantity of excavated material is defined in Chapter 3 of the Clearwater Program EIR/EIS and would not exceed the maximum limits of either LA-3 or LA-2. Therefore, because the LA-3 DEIS analyzed the cultural resource impacts associated with disposing dredged materials at LA-3 and LA-2, this chapter incorporates the analysis by reference and does not provide additional information.

the weather is clear (Pierson et al. 1987:102). The various predictive elements are analyzed to predict the occurrence of unrecorded historic shipwrecks or artifacts associated with wrecks.

7.4.1.3 Baseline

CEQA Baseline

The CEQA baseline for unknown prehistoric and historic archaeological resources, including submerged resources, includes all buried sites. The CEQA baseline would not change unless the sites are encountered during construction.

The CEQA baseline for historical architectural resources includes the NRHP-eligible Bethlehem Shipyard Historic District at the Southwest Marine shaft site.

NEPA No-Federal-Action Baseline

The NEPA no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the condition of resources at the year 2022 when construction of project elements under the Corps jurisdiction would conclude.

The NEPA baseline for unknown prehistoric and historic archaeological resources, including submerged resources, includes all buried sites that may be eligible for the NRHP. The NEPA baseline may change if sites are encountered during construction and are subsequently deemed to be NRHP eligible.

The NEPA baseline for historical architectural resources is the same as the CEQA baseline and includes: the NRHP-eligible Bethlehem Shipyard Historic District at the Southwest Marine shaft site.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

7.4.2 Thresholds of Significance

Thresholds of significance for impacts on cultural resources, are developed from both federal (Section 106 of the NHPA) and state (CEQA) regulations. These two sets of regulations overlap in terms of known prehistoric and historic archaeological resources, unknown prehistoric and historic archaeological resources, and historical architectural resources. Because of this overlap, thresholds for adverse effects (federal) or impacts (state) on known archaeological resources, unknown archaeological resources, and historical architectural resources are numbered CUL-1 and CUL-2, respectively. Therefore, CUL-1 includes historical resources and historic properties such as buildings, structures, objects, sites, or historic districts, but not archaeological sites. This allows for a streamlined discussion of impacts. Paleontological resources are protected only under state regulations, and, therefore, this threshold is numbered CUL-3.

The identification of cultural resources in the project area was based on the results of a record search; archival and historic map research; site visits; and consultation with the NAHC, local Native American

representatives, and other interested parties. This information represents the cultural resources baseline for the impact analysis because cultural resources information does not change substantially over time.

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for cultural resources (CUL):

CUL-1. Causes a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5 or results in an adverse effect on a historic property pursuant to 36 CFR Section 800.5.[2]

CUL-2. Causes a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or results in an adverse effect on a historic property that is an archaeological site pursuant to 36 CFR Section 800.5.[3]

CUL-3. Results in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature.

CUL-4. Results in disturbance of any human remains, including those interred outside of formal cemeteries.

CUL-5. Results in direct or indirect damage or removal of a significant submerged marine cultural resource or results in alteration or causes change to stable environmental conditions for a significant submerged marine cultural resource(s).

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on cultural resources before mitigation. Table 7-6 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 7-6 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal-Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 7-6. Thresholds Evaluated

		Threshold				
	Alt.	CUL-1	CUL-2	CUL-3	CUL-4	CUL-5[a]
Program Element						
Conveyance System Improvements	1–5	X	X	X	X	
SJCWRP Plant Expansion	1–5	X	X	X	X	
SJCWRP Process Optimization	1–4	X	X	X	X	
POWRP Process Optimization	1–4	X	X	X	X	
LCWRP Process Optimization	1–4	X	X	X	X	

[2] Because there is no federal involvement at the program level, CUL-1 for the program only includes state regulations and is evaluated as follows: CUL-1. Causes a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5.
[3] Because there is no federal involvement at the program level, CUL-2 for the program only includes state regulations and is evaluated as follows: CUL-2. Causes a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.

Table 7-6 (Continued)

		Threshold				
	Alt.	**CUL-1**	**CUL-2**	**CUL-3**	**CUL-4**	**CUL-5[a]**
Project Element						
LBWRP Process Optimization	1–4	X	X	X	X	
JWPCP Solids Processing	1–5	X	X	X	X	
Wilmington to SP Shelf (onshore tunnel)[b]	1,2			X		
Wilmington to SP Shelf (offshore tunnel)	1			X		
Wilmington to PV Shelf (onshore tunnel)[b]	1,2			X		
Wilmington to PV Shelf (offshore tunnel)	2			X		
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3			X		
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3			X		
Figueroa/Western to Royal Palms (onshore tunnel)	4			X		
JWPCP East Shaft Site	1,2	X	X	X	X	
TraPac Shaft Site	1,2	X	X	X	X	
LAXT Shaft Site	1,2	X	X	X	X	
Southwest Marine Shaft Site	1,2	X	X	X	X	
JWPCP West Shaft Site	3,4	X	X	X	X	
Angels Gate Shaft Site	3	X	X	X	X	
Royal Palms Shaft Site	4	X	X	X	X	
SP Shelf Riser/Diffuser Area	1					X
PV Shelf Riser/Diffuser Area	2,3					X
Existing Ocean Outfalls Riser/Diffuser Area	1–4	X				X

[a] CUL-5 was not evaluated for the program because the program does not have marine elements.
[b] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
Alt. = alternative

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears. Additionally, in subsequent alternatives where no new elements are introduced under a specific threshold, that threshold is not repeated.

7.4.3 Alternative 1

7.4.3.1 Program

Impact CUL-1. Would Alternative 1 (Program) cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?

Conveyance System – Conveyance Improvements

Construction

The exact location of the conveyance system improvements is not known at this time, but it would be primarily constructed in cut-and-cover construction in public street right-of-way. No above ground buildings or structures would be acquired or altered for the construction, so the improvements would not have the potential to affect above ground historic buildings and structures. There would be no impacts on historical resources.

San Jose Creek Water Reclamation Plant – Plant Expansion and Process Optimization

Construction

The SJCWRP began operating in June 1971; therefore, there are no buildings or structures on the site that were constructed over 50 years ago. Typically, properties less than 50 years of age are not considered eligible for the CRHR unless it can be demonstrated that sufficient time has passed to understand its historical importance (14 CCR Section 4852[d][2]). The expansion of the SJCWRP would not affect buildings or structures more than 50 years of age within the CEQA study area; therefore, there would be no impacts on historical resources.

Pomona Water Reclamation Plant – Process Optimization

Construction

Phillips Mansion is located northwest of the POWRP; however, it is not located within the footprint of the POWRP (South Central Coastal Information Center of the California Historical Resources Information System March 2010). Process optimization would not modify existing buildings and structures; therefore, there would be no impacts on historical resources.

Los Coyotes Water Reclamation Plant and Long Beach Water Reclamation Plant – Process Optimization

Construction

No architectural historical resources were identified within or near the LCWRP or LBWRP. Process optimization would not modify existing buildings and structures at the LCWRP and LBWRP; therefore, there would be no impacts on historical resources.

Joint Water Pollution Control Plant – Solids Processing

Construction

Operation of the JWPCP began in 1928. Therefore, some onsite structures may have been constructed over 50 years ago and may be considered historical architectural resources. The construction and operation of the new digesters, sludge dewatering facilities, and gas handling facilities would be considered alterations and improvements that comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties and would not cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5(b)(3). Construction of these facilities meets Standard 1 because the property would be used as it was historically, and it meets Standard 2 because the character of the property would be retained and preserved. Standard 9 is also relevant because new additions or related new construction would not destroy historic materials, features, and spatial relationships that characterize the property. There would be no impacts on historical resources.

CEQA Impact Determination

Construction of Alternative 1 (Program) would not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5. There would be no impacts.

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

Impact CUL-2. Would Alternative 1 (Program) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?

Conveyance System – Conveyance Improvements

Construction

The Clearwater Program Master Facilities Plan has identified the need for future conveyance system improvements. The conveyance system is generally located between 5 and 25 feet bgs. It is likely located within deposits of older Quaternary alluvium because that is the type of alluvium most commonly found in the Los Angeles Basin. Construction of the conveyance system has the potential to encounter significant unknown buried archaeological resources because it cannot be predicted with certainty whether significant unknown buried archaeological deposits are currently present or absent within these sediments. At this time, however, no specific projects have been proposed, and the actual future sewer alignments are unknown. Even so, given that most of the construction would occur within highly developed public rights-of-way where much of the sediments have been previously disturbed, the potential to encounter significant buried archeological resources is greatly reduced. Furthermore, as standard practice, a Sanitation Districts inspector would be present during sewer construction, and if a potential significant archeological resource were discovered, work would be ordered stopped until a qualified archaeologist could evaluate the find and make appropriate recommendations. Therefore, impacts on unknown buried archaeological resources during construction activities would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion and Process Optimization

Construction

Approximately 70 percent of the SJCWRP property was previously surveyed at the surface for cultural resources in 1976, 1988, 1993, 2000, and 2006 (Lindsey and Schiesl 1976; SRS 1988; McKenna 1993; Smith and Sciro 2000; Storey 2000; McKenna 2006). These surveys did not include subsurface study. No prehistoric or historic archaeological sites have been recorded within the SJCWRP (South Central Coastal Information Center of the California Historical Resources Information System March 2010). The former Southern Pacific Railroad is located near but is not within the CEQA study area; therefore, it would not be affected by the plant expansion. Surface surveys and record search results are generally inconclusive regarding the presence and the exact nature of buried archeological resources within the CEQA study area. Therefore, construction of the plant expansion has the potential to encounter significant unknown buried archaeological resources because it cannot be predicted with certainty whether significant unknown buried archaeological deposits are currently present or absent within the SJCWRP. Furthermore, improvements to the SJCWRP have the potential to encounter significant unknown buried archaeological resources because of the depth of ground disturbance (at least 15 feet bgs) associated with the plant expansion. Any significant impacts on unknown buried archaeological resources caused during construction activities would be reduced through the implementation of Mitigation Measure (MM) CUL-2.

Pomona Water Reclamation Plant – Process Optimization

Construction

The POWRP property has not been previously surveyed for cultural resources. No prehistoric or historic archaeological sites have been recorded at the POWRP (South Central Coastal Information Center of the California Historical Resources Information System March 2010). The prehistoric archaeological site (CA-LAN-883) and two historic resources (Phillips Mansion and the former Southern Pacific Railroad) are within the general vicinity of the POWRP, but they are not within the CEQA study area (South Central Coastal Information Center of the California Historical Resources Information System March 2010). However, construction of process optimization at the POWRP has the potential to encounter significant unknown buried archaeological resources because it cannot be predicted with certainty whether buried archaeological deposits are currently present or absent on site. Furthermore, construction at the POWRP has the potential to encounter significant unknown buried archaeological resources because of the depth of ground disturbance (at least 15 feet bgs). Any significant impacts on unknown buried archaeological resources caused during construction activities would be reduced through the implementation of MM CUL-2.

Los Coyotes Water Reclamation Plant – Process Optimization

Construction

Approximately 50 percent of the LCWRP property was previously surveyed at the surface for cultural resources in 1997 and 2000 (Mason 1997; Smith and Sciro 2000; Smith 2000). These surveys did not include subsurface study. No prehistoric or historic archaeological sites have been recorded at the LCWRP (South Central Coastal Information Center of the California Historical Resources Information System March 2010). The recorded cultural resource (the former Southern Pacific Railroad) is not within

the CEQA study area (South Central Coastal Information Center of the California Historical Resources Information System March 2010). Surface surveys and record search results are generally inconclusive regarding the presence and the exact nature of buried archeological resources. The CEQA analysis for the LCWRP is the same as for the POWRP, and there is the potential to encounter significant unknown buried archaeological deposits during construction. Any significant impacts on unknown buried archaeological resources caused during construction activities would be reduced through the implementation of MM CUL-2.

Long Beach Water Reclamation Plant – Process Optimization

Construction

The LBWRP property was previously surveyed at the surface for cultural resources in 1975 (Rosen 1975). No prehistoric or historic archaeological sites have been recorded at the LBWRP (South Central Coastal Information Center of the California Historical Resources Information System March 2010). These surveys did not include subsurface study. The CEQA analysis for the LBWRP is the same as for the POWRP, and there is the potential to encounter significant unknown buried archaeological deposits during construction. Any significant impacts on unknown buried archaeological resources caused during construction activities would be reduced through the implementation of MM CUL-2.

Joint Water Pollution Control Plant – Solids Processing

Construction

Parts of the JWPCP were previously surveyed at the surface for cultural resources in 1975, 1977, 1979, and 1994 (Rosen 1975; Eggers 1977; Stickel 1979; Desautels 1979; Scott 1994), resulting in a complete survey of the site over time. These surveys did not include subsurface study. No prehistoric or historic archaeological sites have been recorded at the JWPCP (South Central Coastal Information Center of the California Historical Resources Information System March 2010). The CEQA analysis for the JWPCP is the same as for the POWRP, and there is the potential to encounter significant unknown buried archaeological deposits during construction. Any significant impacts on unknown buried archaeological resources caused during construction activities would be reduced through the implementation of MM CUL-2.

CEQA Impact Determination

Construction of plant expansion at the SJCWRP; process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; and solids processing facilities at the JWPCP for Alternative 1 (Program) could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5. Impacts would be significant before mitigation.

Mitigation

MM CUL-2. In the event that buried archaeological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. During cultural resources monitoring, if the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated.

Residual Impacts

MM CUL-2 would allow for the preservation and/or recordation of a significant archaeological resource discovered during the construction of the program elements. Therefore, residual impacts would be less than significant.

Impact CUL-3. Would Alternative 1 (Program) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?

Conveyance System – Conveyance Improvements

Construction

As described in Section 7.2.2, the conveyance system is generally located within Quaternary alluvium, which can contain significant paleontological resources and fossils. Therefore, improvements to the conveyance system have a potential to encounter significant buried paleontological resources. However, given that most of the construction would occur within highly developed rights-of-way where much of the sediments have been previously disturbed, the potential to encounter significant buried paleontological resources is greatly reduced. Any significant impacts on unknown buried paleontological resources caused during construction activities would be addressed through the Sanitation Districts' standard practices for conveyance system improvements, which include having an inspector onsite with the authority to stop work and notify a qualified archeologist if potential significant paleontological resources were discovered.

The Joint Outfall System (JOS) service area has a number of well-known unique geologic features, including the Santa Monica Mountains, the California coastline, and the San Gabriel Mountains. However, construction of the conveyance system would be primarily located in the public right-of-way of existing streets and would generally occur within a trench up to approximately 25 feet bgs. Once construction has concluded, the ground surface would be returned to its original condition. Therefore, construction of the conveyance system would not result in a permanent disturbance or destruction to a unique geologic feature. Impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion and Process Optimization

Construction

The SJCWRP is generally located within Quaternary alluvium, which can contain significant paleontological resources and fossils. Therefore, plant expansion at the SJCWRP, especially excavation and grading deeper than 5 feet, has a potential to encounter significant buried paleontological resources. Any significant impacts on unknown buried paleontological resources caused during construction activities would be reduced through the implementation of MM CUL-3.

The SJCWRP is located within the built urban environment of the county of Los Angeles on a flat developed site. There are no unique geologic features within the existing WRP or within close proximity. Therefore, construction of the plant expansion would not result in a permanent disturbance or destruction of a unique geologic feature.

Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

The POWRP is generally located within Quaternary alluvium overlying shallow bedrock, both of which can contain significant paleontological resources and fossils. Furthermore, the LCWRP and LBWRP are also generally located within Quaternary alluvium. Therefore, construction of process optimization at the POWRP, LCWRP, and LBWRP has a potential to encounter significant buried paleontological resources. Any significant impacts on unknown buried paleontological resources caused during construction activities would be reduced through the implementation of MM CUL-3.

The POWRP is adjacent to Elephant Hill, which could be considered a unique geologic feature. However, the construction of process optimization would take place within the footprint of the POWRP. Therefore, construction would not permanently disturb or destroy any part of Elephant Hill. The LCWRP and LBWRP are located in flat, generally developed, urban areas and do not have any unique geologic formations within their general vicinities. Therefore, construction of process optimization at the LCWRP and LBWRP would not permanently disturb or destroy any unique geologic feature.

Joint Water Pollution Control Plant – Solids Processing

Construction

The JWPCP is generally located within Quaternary alluvium, which can contain significant paleontological resources and fossils. Therefore, construction at the JWPCP, especially excavation and grading deeper than 5 feet, has a potential to encounter significant buried paleontological resources. Any significant impacts on unknown buried paleontological resources caused during construction activities would be reduced through the implementation of MM CUL-3.

The JWPCP is located in a flat, urban, developed setting. There are no unique geologic formations on site at the JWPCP or within the general vicinity. Therefore, construction would not permanently destroy or disturb a unique geologic feature.

CEQA Impact Determination

Construction of plant expansion at the SJCWRP; process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; and solids processing facilities at the JWPCP for Alternative 1 (Program) could result in disturbance or destruction of an unknown paleontological resource or site or a unique geologic feature. Impacts would be significant before mitigation.

Mitigation

MM CUL-3. In the event that potential paleontological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified paleontologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include monitoring by a qualified paleontologist during construction-related ground-disturbing activities. The monitor will retain the option to reduce monitoring if it is determined that the sediments were previously disturbed. Monitoring may also be reduced if potentially fossiliferous units are not present or, if present, are determined to have a low potential to contain fossil resources. The monitor will be equipped to salvage fossils and samples of sediments as they are unearthed and will be empowered to temporarily halt or divert equipment to allow removal of

abundant or large specimens. Recovered specimens will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Specimens will be curated into a professional, accredited museum repository with permanent retrievable storage. A report of findings, with an appended itemized inventory of specimens, will be prepared and will signify completion of the mitigation.

Residual Impacts

Mitigation would allow for the preservation and/or recordation of any paleontological resource found during construction activities. Therefore, the paleontological resource would be appropriately and permanently documented. Residual impacts would be less than significant.

Impact CUL-4. Would Alternative 1 (Program) result in disturbance of any human remains, including those interred outside of formal cemeteries?

Conveyance System – Conveyance Improvements

Construction

Construction of the conveyance system would take place primarily in the right-of-way of public streets between depths of 5 and 25 feet bgs. This type of construction would have a very limited potential to encounter unknown human remains interred outside of formal cemeteries. In the highly unlikely event that buried human remains are encountered during construction, the legal requirements of State Health and Safety Code Section 7050.5 and Public Resources Code 5097.98 would be implemented as discussed in Section 7.3.2.3 and would ensure the appropriate treatment of human remains. Impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion and Process Optimization

Construction

The SJCWRP is not known to contain human remains, and no prehistoric or historic archaeological sites have been recorded at the SJCWRP (South Central Coastal Information Center of the California Historical Resources Information System March 2010). In the highly unlikely event that buried human remains are encountered during excavation associated with plant expansion and process optimization, the legal requirements of State Health and Safety Code Section 7050.5 and Public Resources Code 5097.98 would be implemented as discussed in Section 7.3.2.3 and would ensure the appropriate treatment of human remains. Impacts would be less than significant.

Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, Long Beach Reclamation Plant – Process Optimization

Construction

The POWRP, LCWRP, and LBWRP are not known to contain human remains, and no prehistoric or historic archaeological sites have been recorded at the plants (South Central Coastal Information Center of the California Historical Resources Information System March 2010). In the highly unlikely event that buried human remains are encountered during excavation associated with process optimization at the three plants, the legal requirements of the State Health and Safety Code Section 7050.5 and Public

Resources Code 5097.98 would be implemented as discussed in Section 7.3.2.3 and would ensure the appropriate treatment of human remains. Impacts would be less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

The JWPCP is not known to contain human remains, and no prehistoric or historic archaeological sites have been recorded at the plant (South Central Coastal Information Center of the California Historical Resources Information System March 2010). In the highly unlikely event that buried human remains are encountered during excavation associated with solids processing at the JWPCP, the legal requirements of the State Health and Safety Code Section 7050.5 and Public Resources Code 5097.98 would be implemented as discussed in Section 7.3.2.3 and would ensure the appropriate treatment of human remains. Impacts would be less than significant.

CEQA Impact Determination

Construction of Alternative 1 (Program) would not result in disturbance of any human remains, including those interred outside of formal cemeteries. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

7.4.3.2 Project

Impact CUL-1. Would Alternative 1 (Project) cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?

Shaft Sites – JWPCP East, TraPac, and LAXT

Construction

CEQA Analysis

No historical resources were identified within the CEQA study area for the JWPCP East, TraPac, and LAXT shaft sites. Therefore, there would be no impacts.

NEPA Analysis

No historical resources were identified within the NEPA study area for the JWPCP East, TraPac, and LAXT shaft sites. Therefore, there would be no impacts under NEPA.

Shaft Site – Southwest Marine

Construction

CEQA Analysis

The Southwest Marine shaft site would be located south of the existing Southwest Marine shipbuilding warehouses at the Port of Los Angeles and east of the basins at Berths 243–245. The Southwest Marine shaft site would be located approximately 330 feet from one contributor to the NRHP-eligible Bethlehem Shipyard Historic District (Plate Shop No. 6) and 225 feet from the closest contributor (Machine Shop and Storage Building No. 7), a far enough distance that no historic buildings would be affected by construction. In addition, construction would be temporary. After construction, the shaft would be covered, and there would be no permanent structures that would be out of character with the industrial setting of the district. Therefore, there would be no impacts.

The Southwest Marine shaft site would be located due east of the basins at Berths 243–245. These basins were not identified as contributors to the NRHP-eligible Bethlehem Shipyard Historic District in 2000, but they are located within the historic district boundary. WW II-era slipways, used for the purpose of constructing ships, were demolished in 1959–1961 and converted into basins to accommodate floating dry-docks used for ship repair. The floating dry-docks were mobile, were not an integral part of the basins, and have since been removed.

The Southwest Marine shaft site construction would be adjacent to and to the east of the basins, but would not alter the basins or the setting of the NRHP-eligible historic district. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Rehabilitation of the existing ocean outfalls would include additional ballast and repair of joints to the existing ocean outfalls. Application of both NRHP and CRHP criteria resulted in the opinion that none of the outfalls appear significant at the federal, state, or local levels. Therefore, the rehabilitation of the existing ocean outfalls would result in less than significant impacts.

NEPA Analysis

Environmental impacts within the NEPA study area would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 1 (Project) would not result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact CUL-2. Would Alternative 1 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property that is an archaeological site pursuant to 36 CFR Section 800.5?

Shaft Site – JWPCP East

Construction

CEQA Analysis
Shaft construction would begin by preparing the site with conventional equipment such as bulldozers and scrapers prior to the use of more unconventional equipment for the construction of the shaft itself.

Typically, prehistoric and historic archaeological resources in the CEQA study area are found buried within 10 to 15 feet bgs, although on rare occasions archaeological resources have been found at greater depths. These resources are found at shallow depths because it typically takes many years for sediment to accumulate and cover resources that have been left behind. Part of the JWPCP East shaft site was previously surveyed at the surface as part of a general cultural resources inventory in 1977 (Eggers 1977). However, no subsurface surveys were conducted. No prehistoric or historic archaeological sites have been recorded at the JWPCP or within a 0.5-mile radius (South Central Coastal Information Center of the California Historical Resources Information System March 2010). Therefore, there is a low potential for disturbing any unknown prehistoric or historic archaeological resources during excavation and grading associated with shaft excavation. However, surface surveys and record search results are generally inconclusive regarding the presence and the exact nature of buried archeological resources within the CEQA study area. Despite the previous surface surveys, it cannot be predicted with certainty whether buried archaeological deposits are located within 10 to 15 feet bgs at the JWPCP East shaft site. Therefore, shaft construction has the potential to encounter significant unknown buried prehistoric or historic archaeological resources. Any significant impacts on unknown buried archaeological resources caused during construction activities would be reduced to less than significant through the implementation of MM CUL-2.

NEPA Analysis

Environmental impacts within the NEPA study area would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – TraPac and LAXT

Construction

CEQA Analysis

The TraPac and LAXT shaft sites were previously surveyed at the surface in 1984 (Anonymous 1984). No prehistoric or historic archaeological sites have been recorded at either site (South Central Coastal Information Center of the California Historical Resources Information System March 2010). Two historical cultural resources have been recorded near the edge of the 0.5-mile record search radius of TraPac, but no cultural resources within a 0.5-mile radius for LAXT (South Central Coastal Information Center of the California Historical Resources Information System March 2010). Typically, prehistoric and historic archaeological resources in the CEQA study area are found buried within 10 to 15 feet bgs. However, the TraPac and LAXT shafts are located on artificial fill built into harbor waters where there is no potential for prehistoric or historic archaeological resources. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts within the NEPA study area would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Site – Southwest Marine

Construction

CEQA Analysis

The Southwest Marine shaft site was surveyed in 1984 (Anonymous 1984) and was re-surveyed in 2000 and 2008 (Lassell 2000; ICF 2008). The Southwest Marine shaft site is adjacent to the NRHP-eligible Bethlehem Shipyard (19-187658) (South Central Coastal Information Center of the California Historical Resources Information System March 2010). Two other built resources (Building 10 and the Municipal Wholesale Fish Market) are outside the designated CEQA study area (South Central Coastal Information Center of the California Historical Resources Information System March 2010). The Southwest Marine shaft would be built on land made from artificial fill, overlying Holocene sediment and Timms Point Silt. Typically, prehistoric and historic archaeological resources in the CEQA study area are almost always found buried within 10 to 15 feet bgs. However, the Southwest Marine shaft site is located on artificial fill built into harbor waters where there is no potential for prehistoric or historic archaeological resources. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts within the NEPA study area would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction at the JWPCP East shaft site for Alternative 1 (Project) could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5. Impacts under CEQA would be significant before mitigation.

Mitigation
Implement MM CUL-2.

Residual Impacts
MM CUL-2 would allow for the preservation and recording of a significant prehistoric or historic archaeological resource discovered during construction at the JWPCP East shaft site. Prehistoric and historic archaeological resources in the region are almost always found within the upper 15 feet of sediment. Because shaft construction would begin with bulldozers, scrapers, and other conventional equipment to remove sediment at the shaft site prior to the use of more unconventional methods, there would be an opportunity to identify, preserve, and record any prehistoric or historic archaeological finds. Once shaft construction extends beyond the first 15 feet of sediment, it is highly unlikely any prehistoric or historic resources would be found. Residual impacts would be less than significant.

NEPA Impact Determination
Construction at the JWPCP East shaft site for Alternative 1 (Project) could result in an adverse effect on a historic property that is an archaeological site pursuant to 36 CFR Section 800.5. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
Implement MM CUL-2.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact CUL-3. Would Alternative 1 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis
The tunnel depth for the Wilmington to SP Shelf (onshore) alignment would range from approximately 100 to 200 feet bgs. As discussed in Section 7.2.3.2, this tunnel alignment extends through the Pleistocene Lakewood Formation, San Pedro Sand, and Timms Point Silt. Fossil deposits are locally common in the Lakewood Formation, San Pedro Sand, and Timms Point Silt (Deméré 2007). Because these sediments are known to contain fossils, paleontological resources may be present in this subsurface alignment.

Construction of the tunnel through subsurface sediments has the potential to destroy paleontological resources, some of which may be significant. Tunneling would be performed using a tunnel boring machine (TBM). The rock face being removed could not be observed for paleontological resources before being destroyed by the machine. Therefore, impacts associated with onshore tunneling on unknown buried paleontological resources would be significant and could not be mitigated.

The onshore tunnel alignment would be constructed underground and would not encounter any unique geologic features. Unique geologic features that exist on the surface would not be affected by the subsurface tunneling. Therefore, construction of the onshore tunnel alignment would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

The tunnel depth for the Wilmington to SP Shelf (offshore) alignment would range from approximately 100 to 200 feet below the seafloor. As discussed in Section 7.2.3.2, the alignment would extend through the Miocene Monterey Formation, which is known to contain fossils. Therefore, paleontological resources may be present during the construction of the offshore tunnel alignment.

Construction of the tunnel through subsurface sediments has the potential to destroy paleontological resources, some of which may be significant. Tunneling would be performed using a TBM. The rock face being removed could not be observed for paleontological resources before being destroyed by the machine. Therefore, impacts associated with offshore tunneling on unknown buried paleontological resources would be significant and could not be mitigated.

The offshore tunnel alignment would be constructed underground and would not encounter any unique geologic features. Unique geologic features that exist on the surface would not be affected by the subsurface tunneling. Therefore, construction of the offshore tunnel alignment would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Site – JWPCP East

Construction

CEQA Analysis

As discussed in Section 7.2.3.3, the JWPCP East shaft site is located within an area that is a tributary to the Wilmington Drain. Younger alluvial deposits are likely to be deep in this geomorphic setting, overlying Holocene-Age Lakewood Formation sediments. Paleontological remains may be present in the Lakewood Formation. Therefore, excavation at the JWPCP East shaft site has the potential to encounter significant buried paleontological resources within the Lakewood Formation. Impacts associated with construction would be significant. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant.

The JWPCP East shaft site is located within the flat, built, urban environment, and there are no unique geologic features located within or near the shaft site area. Therefore, shaft construction would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – TraPac

Construction

CEQA Analysis

As discussed in Section 7.2.3.3, the TraPac shaft site is located near the original shoreline of Los Angeles Harbor. Holocene-Age Lakewood Formation sediments and the San Pedro Sand are found in this area. Paleontological remains may be present in the Lakewood Formation; in addition, the San Pedro Sand has a high potential to contain fossil materials. Therefore, excavation at the TraPac shaft site has the potential to encounter significant buried paleontological resources within the Lakewood Formation and the San Pedro Sand. Impacts associated with construction would be significant. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant.

The TraPac shaft site is located within the flat, built, urban environment, and there are no unique geologic features located within or near the shaft site area. Therefore, shaft construction would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – LAXT

Construction

CEQA Analysis

As discussed in Section 7.2.3.3, the LAXT shaft site is located on artificial fill overlying Holocene-Age beach sediments of the Lakewood Formation. While the artificial fill has no potential to contain paleontological resources, paleontological remains may be present in the Lakewood Formation. Therefore, excavation at the LAXT shaft site to a depth of approximately 170 feet bgs has the potential to encounter significant buried paleontological resources. Impacts associated with construction would be significant. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant.

The LAXT shaft site is located within the flat, built, urban environment, and there are no unique geologic features located within or near the shaft site area. Therefore, shaft construction would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Southwest Marine

Construction

CEQA Analysis

As discussed in Section 7.2.3.3, the Southwest Marine shaft site is located on artificial fill overlying Holocene sediment and Timms Point Silt. Paleontological remains may be present in the Timms Point Silt. Therefore, excavation at the Southwest Marine shaft site to a depth of approximately 170 feet bgs has the potential to encounter significant buried paleontological resources. Impacts associated with construction would be significant. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant.

The Southwest Marine shaft site is located within the flat, built, urban environment, and there are no unique geologic features located within or near the shaft site area. Therefore, shaft construction would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) could result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature. Impacts under CEQA would be significant before mitigation. Construction of the onshore and offshore tunnel for Alternative 1 (Project) could also result in disturbance or destruction of a unique paleontological resource or site. Impacts under CEQA would be significant, and there is no feasible mitigation to reduce impacts.

Mitigation

Implement MM CUL-3.

Residual Impacts

MM CUL-3 would apply to the disturbance of the natural sediment at each shaft site construction area during the use of conventional excavation equipment. However, once the shaft has been excavated to depths below the groundwater table, conditions would limit effective monitoring and recovery of paleontological resources, and there would be no feasible way to apply MM CUL-3. Furthermore, MM CUL-3 could not be applied during construction of the tunnel. This is because the TBM continually moves forward and offers no opportunity for appropriate monitoring for paleontological resources. Therefore, residual impacts would be significant and unavoidable.

NEPA Impact Determination

Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) could result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of the onshore and offshore tunnel for Alternative 1 (Project) could also result in disturbance or destruction of a unique paleontological resource

or site. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6), and there is no feasible mitigation to reduce impacts.

Mitigation
Implement MM CUL-3.

Residual Impacts
Residual impacts would be significant and unavoidable, as described for the CEQA impact determination.

Impact CUL-4. Would Alternative 1 (Project) result in disturbance of any human remains, including those interred outside of formal cemeteries?

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis
The JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites are not known to contain human remains, and no prehistoric or historic archaeological sites have been recorded in these locations (South Central Coastal Information Center of the California Historical Resources Information System March 2010). Construction at the shaft sites would have a very limited potential to encounter unknown human remains interred outside of formal cemeteries. In the highly unlikely event that buried human remains are encountered during excavation at the shaft sites, the legal requirements of State Health and Safety Code Section 7050.5 and Public Resources Code 5097.98 would be implemented as discussed in Section 7.3.2.3 and would ensure the appropriate treatment of human remains. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction of Alternative 1 (Project) would not result in disturbance of any human remains, including those interred outside of formal cemeteries. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 1 (Project) would not result in disturbance of any human remains, including those interred outside of formal cemeteries. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact CUL-5. Would Alternative 1 (Project) result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s)?

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis
Construction activities on the SP Shelf could directly affect the construction site and may also include areas surrounding the construction site such as mooring areas, wire drags, and any other areas where there are direct impacts on the seafloor. Therefore, impacts on submerged cultural resources during construction activities may occur from bottom disturbances during the installation of the riser and diffuser; disturbances from wire drags; and any other disturbances to the seafloor.

A review of data from a previous geophysical survey conducted by Fugro West identified 20 side-scan sonar returns on the SP Shelf. These sonar returns are exposed features on the seafloor, some of which may represent potentially significant prehistoric or historic submerged cultural resources that are currently undiscovered and unknown. Examples of the exposed features include man-made debris, possible shipwrecks, dredge spoils, rock outcroppings, cables, wires, wellheads, and anchors. However, all of the sonar contacts located during this survey are located on the SP Shelf, and it is unlikely that any of these targets would be affected by project activities.

It is unlikely that any unknown prehistoric cultural resources or sites would be affected by the construction footprint of the SP Shelf riser and diffuser at a depth of approximately 200 feet. The human populations along the 12,000 BP to 10,000 BP shoreline (a depth of 150 to 60 feet below present sea level) were much smaller than those later in history. Therefore, they would have left fewer cultural resources in the area during their time. While the potential for outcrops, relic channels, and paleovalleys (which would indicate potential for prehistoric sites and resources) exists on the SP Shelf, the probability of finding resources is low because of the planned depth of the riser and diffuser. Therefore, because the location of the SP Shelf riser and diffuser area is deeper than 150 feet below present sea level and the geomorphology likely prevented preservation, the probability of finding unknown significant submerged prehistoric resources within the SP Shelf riser and diffuser area is considered low.

Review of available resources indicates no known historic submerged resources within the construction footprint of the SP Shelf riser and diffuser area (CSLC; BOEMRE shipwreck database; NOAA AWOIS (2007); GMWD; Macfarlane Archaeological Consultants 1991; Pierson 1980; Pierson et al. 1987; Weinman and Stickel 1978; Cardone and Smith 1989; Marx 1971). While historic shipwrecks are reported on the SP Shelf, no known shipwrecks are within the construction footprint. Generally, there is a low probability that any unknown or unrecorded shipwrecks are within this area.

Submerged cultural resource surveys have not been conducted in the study area. Therefore, although there is a low probability of finding significant prehistoric or historic submerged cultural resources in the study area, the potential does exist. Construction of the riser and diffuser on the SP Shelf may disturb or destroy unknown submerged prehistoric or historic archaeological resources. Any disturbance of a currently

unknown significant prehistoric or historic archaeological resource would result in an adverse impact on that resource. Implementation of MM CUL-5 would mitigate the impact on unknown prehistoric or historic archaeological resources during construction activities on the SP Shelf to less than significant.

There are no established avoidance criteria for archaeological resources. As an example, the BOEMRE allows avoidance distances to be recommended at the discretion of each archaeologist responsible for the region (Pacific OCS Region). No other federal agencies have formally established avoidance criteria; only the state of Texas requires a 50 meter (164 feet) avoidance margin for potentially significant resources in inshore waters (bays, estuaries, rivers, etc.) (Research Planning, Inc. et al. 2004:44). Therefore, the establishment of a buffer zone is recommended as an acceptable method of avoidance around a potentially significant resource. The key factor in determining the size of the buffer zone is the areal extent of the magnetic or acoustic anomaly; the larger the anomaly, the larger the perimeter of the avoidance zone. Buffer zones should be designed to conform to the shape of a known anomaly (shipwreck) or designed to encompass the possible extents of the unknown anomaly, generally a circle around the center point.

Construction activities associated with the riser and diffuser area may alter or change stable environmental conditions. This may include the removal of sediment at or near a resource, seafloor disturbance activities, and other construction-related activities. Any of these activities may alter stable environmental conditions, which may have an adverse effect on historic resources. Impacts would be significant. Implementation of MM CUL-5 would reduce impacts on unknown submerged cultural resources to less than significant. Furthermore, the additional studies required by the Corps to comply with Section 106 requirements of the NHPA, as discussed in Section 7.4.1.2, would serve to reduce impacts on unknown prehistoric and historic archaeological resources during construction activities.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

It is unlikely that any submerged cultural resources would be affected by the operation of the riser and diffuser. Isolated prehistoric artifacts that may be located near the diffuser would consist primarily of lithic (rock, stone) material. This type of artifact is also likely buried by sediment and would not likely be affected by the introduction of effluent being released in the water column. Organic artifacts (i.e., wood or reed) are more susceptible to a change in water quality. However, this type of material is not likely to be found in the area of the SP Shelf because it has likely deteriorated or been washed away.

Potential effects of effluent into the water column were considered relative to historic shipwrecks (i.e., accelerated wood deterioration, increased biologic activity on shipwreck sites). However, it is unlikely these resources would be affected by the operation of the riser and diffuser. Effects to shipwreck sites would be negligible to non-existent due to a lack of bacteria within the effluent and dilution of the effluent within the water column once it passes through the riser and diffuser.

Furthermore, evidence suggests burial of submerged cultural resources enhances their preservation (Research Planning, Inc. et al. 2004:24). Any accumulation of sediment over the top of a wreck site or other resource would likely assist in protecting it. Therefore, the removal of sediment by the operation of the diffuser may constitute an indirect impact because it may reduce the integrity of a shipwreck or other

resource. However, the diffuser legs would be aligned to parallel the contours of the ocean floor, which coincide with the direction of prevailing currents. Therefore, it is highly unlikely that the diffuser would alter local currents to the extent that would result in the removal of a protective sediment layer overlying nearby submerged cultural resources. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Impacts on submerged cultural resources during rehabilitation activities may include bottom disturbances, wire drags, and any other direct impacts on the seafloor. Rehabilitation activities associated with the existing diffuser areas may alter or change stable environmental conditions as described under construction of the SP Shelf riser and diffuser area. During the course of rehabilitation, it is possible that unanticipated archaeological remains may be encountered.

Rehabilitation of the existing ocean outfalls would be localized; therefore, it is unlikely that any prehistoric sites would be affected by project activities. Furthermore, previous construction and maintenance activities have already directly affected or destroyed any prehistoric resources. Therefore, prehistoric resources would not be affected during rehabilitation activities.

It is likely that any historic or submerged cultural resources located within the study area were directly affected during initial construction activities during the mid-20th century as well as subsequent maintenance activities associated with the existing ocean outfalls. In addition, the Sanitation Districts have not encountered any historic or submerged cultural resources during their annual visual inspections of the existing ocean outfalls and ballast materials. Therefore, it is unlikely that rehabilitation activities would have an impact on existing historic and submerged cultural resources. However, it is acknowledged that no underwater cultural resource surveys have been conducted within or near the APE. Consequently, it is noted that the potential exists to encounter significant historic resources in the general area. Therefore, impacts would be significant before mitigation. Implementation of MM CUL-5 would reduce impacts on unknown submerged historical resources to less than significant. Furthermore, the additional studies required by the Corps to comply with Section 106 of the NHPA discussed in Section 7.4.1.2 would serve to reduce impacts to unknown prehistoric and historic archaeological resources during construction activities.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Maintenance of the existing ocean outfalls has been ongoing since the mid-20th century; therefore, it is unlikely that continued maintenance would directly or indirectly affect any unknown significant

prehistoric or historic resources. Furthermore, there would be no net increase in the effluent discharged, so there would be no change from existing conditions. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the SP Shelf and rehabilitation of the existing ocean outfalls for Alternative 1 (Project) could result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s). Impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

MM CUL-5. In the event that potentially historic resources, such as shipwrecks, are encountered in the project area during construction activities, work will stop immediately until a qualified archaeologist can assess the significance of the resource and, if necessary, enact appropriate management measures. This may include the initiation of avoidance or buffer zones, or a data recovery program that may include excavation or documentation of the resource.

Residual Impacts

MM CUL-5 would result in the preservation and recordation of any unknown prehistoric or historic resource discovered during construction within the study area on the SP Shelf or the existing ocean outfalls. Furthermore, the additional studies required by the Corps to comply with Section 106 requirements of the NHPA, as discussed in Section 7.4.1.2, would serve to reduce impacts on unknown prehistoric and historic archaeological resources during construction activities. Therefore, residual impacts would be less than significant.

NEPA Impact Determination

Construction of the riser and diffuser on the SP Shelf and the existing ocean outfalls for Alternative 1 (Project) could result in direct or indirect damage or removal of a significant submerged marine cultural resource or cause change to stable environmental conditions for a significant submerged marine cultural resource(s). Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM CUL-5.

Residual Impacts

Residual impacts would be less than significant, as described for the CEQA impact determination.

7.4.3.3 Impact Summary – Alternative 1

Impacts on cultural resources analyzed in this EIR/EIS for Alternative 1 are summarized in Table 7-7 and Table 7-8. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 7-7. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact CUL-1. Would Alternative 1 (Program) cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?			
Conveyance System			
Conveyance Improvements	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
SJCWRP			
Plant Expansion	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
POWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
LCWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
LBWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
JWPCP			
Solids Processing	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
Impact CUL-2. Would Alternative 1 (Program) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 7-7 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
SJCWRP			
Plant Expansion	CEQA Significant Impact During Construction	MM CUL-2. In the event that buried archaeological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. During cultural resources monitoring, if the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Significant Impact During Construction	MM CUL-2	CEQA Less Than Significant Impact During Construction
POWRP			
Process Optimization	CEQA Significant Impact During Construction	MM CUL-2	CEQA Less Than Significant Impact During Construction
LCWRP			
Process Optimization	CEQA Significant Impact During Construction	MM CUL-2	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Significant Impact During Construction	MM CUL-2	CEQA Less Than Significant Impact During Construction
JWPCP			
Solids Processing	CEQA Significant Impact During Construction	MM CUL-2	CEQA Less Than Significant Impact During Construction
Impact CUL-3. Would Alternative 1 (Program) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
SJCWRP			
Plant Expansion	CEQA Significant Impact During Construction	MM CUL-3. In the event that potential paleontological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified paleontologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may	CEQA Less Than Significant Impact During Construction

Table 7-7 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
		include monitoring by a qualified paleontologist during construction-related ground-disturbing activities. The monitor will retain the option to reduce monitoring if it is determined that the sediments were previously disturbed. Monitoring may also be reduced if potentially fossiliferous units are not present or, if present, are determined to have a low potential to contain fossil resources. The monitor will be equipped to salvage fossils and samples of sediments as they are unearthed and will be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Specimens will be curated into a professional, accredited museum repository with permanent retrievable storage. A report of findings, with an appended itemized inventory of specimens, will be prepared and will signify completion of the mitigation.	
Process Optimization	CEQA Significant Impact During Construction	MM CUL-3	CEQA Less Than Significant Impact During Construction
POWRP			
Process Optimization	CEQA Significant Impact During Construction	MM CUL-3	CEQA Less Than Significant Impact During Construction
LCWRP			
Process Optimization	CEQA Significant Impact During Construction	MM CUL-3	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Significant Impact During Construction	MM CUL-3	CEQA Less Than Significant Impact During Construction
JWPCP			
Solids Processing	CEQA Significant Impact During Construction	MM CUL-3	CEQA Less Than Significant Impact During Construction
Impact CUL-4. Would Alternative 1 (Program) result in disturbance of any human remains, including those interred outside of formal cemeteries?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 7-7 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 7-8. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact CUL-1. Would Alternative 1 (Project) cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?				
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction

Table 7-8 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact CUL-2. Would Alternative 1 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM CUL-2. In the event that buried archaeological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. During cultural resources monitoring, if the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-2	NEPA Less Than Significant Impact During Construction
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction

Table 7-8 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Impact CUL-3. Would Alternative 1 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Wilmington to SP Shelf (Offshore)	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM CUL-3. In the event that potential paleontological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified paleontologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include monitoring by a qualified paleontologist during construction-related ground-disturbing activities. The monitor will retain the option to reduce monitoring if it is determined that the sediments were previously disturbed. Monitoring may also be reduced if potentially fossiliferous units are not present or, if present, are determined to have a low potential to contain fossil resources. The monitor will be equipped to salvage fossils and samples of sediments as they are unearthed and will be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Specimens will be curated into a professional, accredited museum repository with permanent retrievable	CEQA Significant and Unavoidable Impact During Construction

Table 7-8 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			storage. A report of findings, with an appended itemized inventory of specimens, will be prepared and will signify completion of the mitigation.	
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction
TraPac	CEQA Significant Impact During Construction	N/A	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction
LAXT	CEQA Significant Impact During Construction	N/A	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction
Impact CUL-4. Would Alternative 1 (Project) result in disturbance of any human remains, including those interred outside of formal cemeteries?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 7-8 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact CUL-5. Would Alternative 1 (Project) result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s)?				
Riser/Diffuser Area				
SP Shelf	CEQA Significant Impact During Construction	N/A	MM CUL-5. In the event that potentially historic resources, such as shipwrecks, are encountered in the project area during construction activities, work will stop immediately until a qualified archaeologist can assess the significance of the resource and, if necessary, enact appropriate management measures. This may include the initiation of avoidance or buffer zones, or a data recovery program that may include excavation or documentation of the resource.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM CUL-5	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	MM CUL-5	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM CUL-5	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

7.4.4 Alternative 2

7.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

7.4.4.2 Project

The impacts for the onshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact CUL-3. Would Alternative 2 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
The CEQA analysis for the Wilmington to PV Shelf (offshore) tunnel alignment from the TraPac shaft site to the Southwest Marine shaft site would be the same as for the Wilmington to SP Shelf (offshore) tunnel alignment analysis discussed for Alternative 1 (Project). The CEQA analysis for the offshore tunnel alignment from the Southwest Marine shaft site to the PV Shelf would also be the same as for the Wilmington to SP Shelf (offshore) alignment analysis discussed for Alternative 1 (Project) because this tunnel alignment would extend through the same Miocene Monterey Formation. Therefore, the CEQA analysis for the entire Wilmington to PV Shelf tunnel alignment is the same as the analysis discussed for Alternative 1 (Project). Impacts associated with offshore tunneling on unknown buried paleontological resources would be significant and could not be mitigated.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination
Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) could result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature. Impacts under CEQA would be significant before mitigation. Construction of the onshore and offshore tunnel for Alternative 2 (Project) could also result in disturbance or destruction of a unique paleontological resource or site. Impacts under CEQA would be significant, and there is no feasible mitigation to reduce impacts.

Mitigation
Implement MM CUL-3.

Residual Impacts
MM CUL-3 would apply to the disturbance of the natural sediment at each shaft site construction area during the use of conventional excavation equipment. However, once the shaft has been excavated to depths below the groundwater table, conditions would limit effective monitoring and recovery of

paleontological resources, and there would be no feasible way to apply MM CUL-3. Furthermore, MM CUL-3 could not be applied during construction of the tunnel. This is because the TBM continually moves forward and offers no opportunity for appropriate monitoring for paleontological resources. Therefore, residual impacts would be significant and unavoidable.

NEPA Impact Determination

Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) could result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of the onshore and offshore tunnel for Alternative 2 (Project) could also result in disturbance or destruction of a unique paleontological resource or site. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6), and there is no feasible mitigation to reduce impacts.

Mitigation

Implement MM CUL-3.

Residual Impacts

Residual impacts would be significant and unavoidable, as described for the CEQA impact determination.

Impact CUL-5. Would Alternative 2 (Project) result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s)?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

Impacts associated with the construction on the PV Shelf are the same as the impacts associated with construction on the SP Shelf. Construction activities on the PV Shelf could directly affect the construction site and may also include areas surrounding the construction site such as mooring areas, wire drags, and any other areas where there are direct impacts on the seafloor. Therefore, impacts on submerged cultural resources during construction activities may occur from bottom disturbances during the installation of the riser and diffuser; disturbances from wire drags; and any other disturbances to the seafloor.

A review of data from a previous geophysical survey conducted by Fugro West on the PV Shelf identified four side-scan sonar returns that may represent potentially significant submerged cultural resources. However, all of these sonar contacts are located outside of the study area on the PV Shelf and, it is unlikely that any of these targets would be affected by project activities.

Similar to Alternative 1, with the placement of the riser and diffuser at a depth of approximately 175 feet, it is unlikely any prehistoric sites would be affected by project activities. The Paleolithic shoreline (12,000 BP to 10,000 BP) would have been located in shallower water (60 to 150 feet below present sea levels) (Pierson et al. 1987:34). Therefore, the potential for submerged prehistoric sites remains low.

Review of available resources indicates no known historic submerged resources within the riser and diffuser area (CSLC; BOEMRE shipwreck database; NOAA AWOIS (2007); GMWD; Macfarlane

Archaeological Consultants 1991; Pierson 1980; Pierson et al. 1987; Weinman and Stickel 1978; Cardone and Smith 1989; Marx 1971). While there are known historic shipwrecks on the PV Shelf, no shipwrecks have been identified within the study area. The nearest reported shipwrecks (actual location not confirmed) include the *Benita* (sunk in 1951), the *Nelson* (sunk 1936), and the *Saint James* (built in 1940 and burned in 1949). Plotting the wreck locations (from coordinates provided by the CSLC shipwreck database) indicates the *Benita* and *Nelson* are located on the PV Shelf in approximately 120 to 181 feet of water. The *Saint James* is reported sunk in deeper water (400 feet or more and due west of the riser and diffuser area). Similar to Alternative 1, no submerged cultural resource surveys have been conducted in the study area. Therefore, although there is a relatively low probability of finding significant prehistoric or historic submerged cultural resources in the study area, the potential does exist. Construction of the riser and diffuser on the PV Shelf may potentially disturb or destroy an existing unknown submerged prehistoric or historic archaeological resource. Any disturbance of a currently unknown significant prehistoric or historic archaeological resource would result in an adverse impact on that resource. Impacts would be significant before mitigation. Implementation of MM CUL-5 would mitigate the impact on unknown submerged prehistoric or historic archaeological resources on the PV Shelf. Furthermore, the additional studies required by the Corps to comply with Section 106 requirements of the NHPA, as discussed in Section 7.4.1.2, would serve to reduce impacts on unknown submerged prehistoric and historic archaeological resources during construction activities.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Similar to Alternative 1, it is unlikely that any submerged cultural resources would be affected by the operation of the riser and diffuser. Isolated prehistoric artifacts that may be located near the riser and diffuser area would consist primarily of lithic (rock, stone) material. This type of artifact is also likely buried by sediment and would not be affected by the introduction of effluent being released in the vicinity. Organic artifacts (i.e., wood or reed) are more susceptible to a change in water quality, however this type of material is not likely to be found in the area of the PV Shelf because it has likely deteriorated or been washed away.

While the potential effects (i.e., accelerated wood deterioration, increased biologic activity on shipwreck sites) of effluent into the water column were considered relative to historic wooden- and iron-hulled shipwrecks, it is unlikely any of these resources would be affected by the operation of the riser and diffuser. Effects to shipwreck sites would be negligible to non-existent due to a lack of bacteria within the effluent and dilution of the effluent within the water column once it passes through the riser and diffuser.

Evidence suggests burial of submerged cultural resources enhances their preservation (Research Planning, Inc. et al. 2004:24). Any potential accumulation of sediment over the top of a wreck site or other resource would likely assist in protecting it. The potential removal of sediment by the operation of the diffuser may constitute an indirect impact was also considered because it may reduce the integrity of a shipwreck or other resource. However, the diffuser legs would be aligned to parallel the contours of the ocean floor, which coincide with the direction of prevailing currents. Therefore, it is highly unlikely that the diffuser would alter local currents to the extent that would result in the removal of a protective sediment layer overlying nearby submerged cultural resources. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the PV Shelf and rehabilitation of the existing ocean outfalls for Alternative 2 (Project) could result in direct or indirect damage or removal of a significant submerged marine cultural resource. Construction impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM CUL-5.

Residual Impacts

MM CUL-5 would result in the avoidance, preservation, and/or recordation of any unknown submerged prehistoric or historic resource discovered during construction or operations on the PV Shelf. Furthermore, the additional studies required by the Corps to comply with Section 106 requirements of the NHPA, as discussed in Section 7.4.1.2, would serve to reduce impacts on unknown submerged prehistoric and historic archaeological resources during construction activities. Therefore, residual impacts would be less than significant.

NEPA Impact Determination

Construction of the riser and diffuser on the PV Shelf and the existing ocean outfalls for Alternative 2 (Project) could result in direct or indirect damage or removal of a significant submerged marine cultural resource. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM CUL-5.

Residual Impacts

Residual impacts would be less than significant, as described for the CEQA impact determination.

7.4.4.3 Impact Summary – Alternative 2

Impacts on cultural resources for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 7-7. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 7-9. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 7-9. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact CUL-1. Would Alternative 2 (Project) cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?				
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact CUL-2. Would Alternative 2 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property that is an archaeological site pursuant to 36 CFR Section 800.5?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM CUL-2. In the event that buried archaeological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include development of avoidance strategies, capping with fill material, or mitigation of impacts	CEQA Less Than Significant Impact During Construction

Table 7-9 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			through data recovery programs such as excavation or detailed documentation. During cultural resources monitoring, if the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated.	
	NEPA Significant Impact During Construction	Indirect	MM CUL-2	NEPA Less Than Significant Impact During Construction
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Impact CUL-3. Would Alternative 2 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Wilmington to PV Shelf (Offshore)	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction

Table 7-9 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM CUL-3. In the event that potential paleontological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified paleontologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include monitoring by a qualified paleontologist during construction-related ground-disturbing activities. The monitor will retain the option to reduce monitoring if it is determined that the sediments were previously disturbed. Monitoring may also be reduced if potentially fossiliferous units are not present or, if present, are determined to have a low potential to contain fossil resources. The monitor will be equipped to salvage fossils and samples of sediments as they are unearthed and will be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Specimens will be curated into a professional, accredited museum repository with permanent retrievable storage. A report of findings, with an appended itemized inventory of specimens, will be prepared and will signify completion of the mitigation.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction
TraPac	CEQA Significant Impact During Construction	N/A	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction
LAXT	CEQA Significant Impact During Construction	N/A	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction

Table 7-9 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction
Impact CUL-4. Would Alternative 2 (Project) result in disturbance of any human remains, including those interred outside of formal cemeteries?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 7-9 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact CUL-5. Would Alternative 2 (Project) result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s)?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	MM CUL-5. In the event that potentially historic resources, such as shipwrecks, are encountered in the project area during construction activities, work will stop immediately until a qualified archaeologist can assess the significance of the resource and, if necessary, enact appropriate management measures. This may include the initiation of avoidance or buffer zones, or a data recovery program that may include excavation or documentation of the resource.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM CUL-5	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	MM CUL-5	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM CUL-5	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

7.4.5 Alternative 3

7.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

7.4.5.2 Project

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as for Alternative 2 (Project). The impacts for the existing ocean outfalls for Alternative 3 (Project) would be the same as for Alternative 1 (Project).

Impact CUL-1. Would Alternative 3 (Project) cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?

Shaft Site – JWPCP West

Construction

CEQA Analysis
No historical resources were identified within the CEQA study area for the JWPCP West shaft site. Therefore, there would be no impacts.

NEPA Analysis
No historical resources were identified within the NEPA study area for the JWPCP West shaft site. Therefore, there would be no impacts under NEPA.

Shaft Site – Angels Gate

Construction

CEQA Analysis
The Angels Gate shaft site is not located within the boundary of any of the three historic districts on the Fort MacArthur Military Reservation. Therefore, no historical resource would be affected by construction at the shaft site. There would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Construction of Alternative 3 (Project) would not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 3 (Project) would not result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact CUL-2. Would Alternative 3 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property that is an archaeological site pursuant to 36 CFR Section 800.5?

Shaft Site – JWPCP West

Construction

CEQA Analysis
Typically, prehistoric and historic archaeological resources in the CEQA study area are found buried within 10 to 15 feet bgs, although on rare occasions archaeological resources have been found at greater depths. These resources are found at shallow depths because it typically takes many years for sediment to accumulate and cover resources that have been left behind. Parts of the JWPCP West shaft site were previously surveyed at the surface for cultural resources in 1975, 1977, and 1994 (Rosen 1975; Stickel 1979; Scott 1994), resulting in a complete surface survey of the shaft site footprint over time. However, no subsurface surveys were conducted. No prehistoric or historic archaeological sites have been recorded in the JWPCP West shaft site or within a 0.5-mile radius (South Central Coastal Information Center of the California Historical Resources Information System March 2010). Therefore, there is a low potential for disturbing any unknown prehistoric or historic archaeological resources during excavation and grading associated with shaft excavation. However, surface surveys and record search results are generally inconclusive regarding the presence and the exact nature of buried archaeological resources within the CEQA study area. Therefore, despite the previous surface surveys, it cannot be predicted with certainty whether buried archaeological deposits are located at depths of 10 to 15 feet bgs at the JWPCP West shaft site. Shaft site excavation has the potential to encounter significant unknown buried archaeological resources. Any significant impacts on unknown buried archaeological resources caused during construction activities would be reduced to less than significant through the implementation of MM CUL-2.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis
Typically, prehistoric and historic archaeological resources in the CEQA study area are almost always found buried within 10 to 15 feet bgs, although on rare occasions archaeological resources have been found at greater depths. These resources are found at shallow depths because it typically takes many years for sediment to accumulate and cover resources that have been left behind. The Angels Gate shaft site was previously surveyed at the surface in 1974, 1975, and 1989 (Eberhart 1974; Frierman 1989). However, no subsurface surveys were conducted. No prehistoric or historic archaeological sites have been recorded in the Angels Gate shaft site (South Central Coastal Information Center of the California

Historical Resources Information System March 2010). There are recorded historical resources within a 0.5-mile radius of the shaft site including CA-LAN-144, Point Fermin Lighthouse, and the Fort MacArthur historic districts. Because other historical resource sites are within the general area of the shaft site, there is a moderate potential for disturbing any unknown prehistoric or historic archaeological resources during excavation and grading associated with shaft excavation. Furthermore, surface surveys and record search results are generally inconclusive regarding the presence and the exact nature of buried archaeological resources within the CEQA study area. Therefore, it cannot be predicted with certainty whether buried archaeological deposits are located within 10 to 15 feet bgs at the Angels Gate shaft site. Therefore, shaft construction has the potential to encounter significant unknown buried prehistoric or historic archaeological resources. Any significant impacts on unknown buried archaeological resources caused during construction activities would be reduced to less than significant through the implementation of MM CUL-2.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM CUL-2.

Residual Impacts

MM CUL-2 would allow for the preservation and recordation of a significant prehistoric or historic archaeological resource discovered during the construction of the JWPCP West and Angels Gate shaft sites. Prehistoric and historic archaeological resources in the region are almost always found within the upper 15 feet of sediment. Because shaft construction would begin with bulldozers, scrapers, and other conventional equipment to remove sediment at the shaft site prior to the use of more unconventional methods, there would be an opportunity to identify, preserve, and record any prehistoric or historic archaeological finds. Once shaft construction extends beyond the first 15 feet of sediment, it is highly unlikely any prehistoric or historic resources would be found. Residual impacts would be less than significant.

NEPA Impact Determination

Construction at the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) could result in an adverse effect on a historic property that is an archaeological site pursuant to 36 CFR Section 800.5. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM CUL-2.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact CUL-3. Would Alternative 3 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

The tunnel depth for the Figueroa/Gaffey to PV Shelf (onshore) alignment would range from approximately 70 to 370 feet bgs. The geologic formations for this onshore tunnel alignment are similar to those for the Wilmington to SP Shelf (onshore) alignment (Pleistocene Lakewood Formation, San Pedro Sand, and Timms Point Silt). Therefore, the CEQA analysis for this onshore tunnel alignment is the same as for the Wilmington to SP Shelf (onshore) alignment discussed under Alternative 1 (Project). Impacts associated with onshore tunneling on unknown buried paleontological resources would be significant and could not be mitigated.

The onshore tunnel alignment would be constructed underground and would not encounter any unique geologic features. Unique geological features that exist on the surface would not be affected by the subsurface tunneling. Therefore, construction of the onshore tunnel alignment would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

The tunnel depth for the Figueroa/Gaffey to PV Shelf (offshore) alignment would range from approximately 100 to 250 feet bgs or below the seafloor. The geologic formations for this offshore tunnel alignment are similar to those for the Wilmington to SP Shelf (offshore) alignment (Miocene Monterey Formation). Therefore, the CEQA analysis for this offshore tunnel alignment is the same as for the Wilmington to SP Shelf (offshore) alignment. Impacts associated with offshore tunneling on unknown buried paleontological resources would be significant and could not be mitigated.

The offshore tunnel alignment would be constructed underground and would not encounter any unique geologic features. Unique geological features that exist on the surface would not be affected by the subsurface tunneling. Therefore, construction of the offshore tunnel alignment would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Site – JWPCP West

Construction

CEQA Analysis

As discussed in Section 7.2.3.3, younger alluvial deposits at the JWPCP West shaft site are likely to be deep in this geomorphic setting, overlying Holocene-Age Lakewood Formation sediments. Paleontological remains may be present in the Lakewood Formation. Therefore, excavation at the JWPCP West shaft site has the potential to encounter significant buried paleontological resources. Impacts associated with construction would be significant. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant.

The JWPCP West shaft site is located within the flat, built, urban environment, and there are no unique geologic features located within or near the shaft site area. Therefore, shaft construction would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described above for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

As discussed in Section 7.2.3.3, the Angels Gate shaft site is situated on an uplifted wave cut terrace underlain by the Altamira Shale Member of the Monterey Formation. These sediments have a high potential to encompass intact paleontological materials. Excavation at the Angels Gate shaft site has the potential to encounter significant buried paleontological resources. Impacts associated with construction would be significant. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant.

The Angels Gate shaft site is located within an existing parking lot, and there are no unique geologic features located within or near the shaft site area. Therefore, shaft construction would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described above for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) could result in disturbance or destruction of a unique paleontological resource or site or unique geologic feature. Impacts under CEQA would be significant before mitigation. Construction of the onshore and offshore tunnel for Alternative 3 (Project) could also result in disturbance or destruction of a unique

paleontological resource or site. Impacts under CEQA would be significant, and there is no feasible mitigation to reduce impacts.

Mitigation
Implement MM CUL-3.

Residual Impacts
MM CUL-3 would apply to the disturbance of the natural sediment at each shaft site construction area during the use of conventional excavation equipment. However, once the shaft has been excavated to depths below the groundwater table, conditions would limit effective monitoring and recovery of paleontological resources, and there would be no feasible way to apply MM CUL-3. Furthermore, MM CUL-3 could not be applied during construction of the tunnel. This is because the TBM continually moves forward and offers no opportunity for appropriate monitoring for paleontological resources. Therefore, residual impacts would be significant and unavoidable.

NEPA Impact Determination
Construction at the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) could result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of the onshore and offshore tunnel for Alternative 3 (Project) could also result in disturbance or destruction of a unique paleontological resource or site. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6), and there is no feasible mitigation to reduce impacts.

Mitigation
Implement MM CUL-3.

Residual Impacts
Residual impacts would be significant and unavoidable, as described for the CEQA impact determination.

Impact CUL-4. Would Alternative 3 (Project) result in disturbance of any human remains, including those interred outside of formal cemeteries?

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis
The JWPCP West and Angels Gate shaft sites are not known to contain human remains, and no prehistoric or historic archaeological sites have been recorded in these locations (South Central Coastal Information Center of the California Historical Resources Information System March 2010). Construction at the shaft sites would have a very limited potential to encounter unknown human remains interred outside of formal cemeteries. In the highly unlikely event that buried human remains are encountered during excavation at the shaft sites, the legal requirements of State Health and Safety Code Section 7050.5 and Public Resources Code 5097.98 would be implemented as discussed in Section 7.3.2.3 and would ensure the appropriate treatment of human remains. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not result in disturbance of any human remains, including those interred outside of formal cemeteries. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not result in disturbance of any human remains, including those interred outside of formal cemeteries. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

7.4.5.3 Impact Summary – Alternative 3

Impacts on cultural resources for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 7-7. Impacts analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 7-10. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 7-10. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact CUL-1. Would Alternative 3 (Project) cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?				
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Angels Gate	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction

Table 7-10 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact CUL-2. Would Alternative 3 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property that is an archaeological site pursuant to 36 CFR Section 800.5?				
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM CUL-2. In the event that buried archaeological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. During cultural resources monitoring, if the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-2	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Significant Impact During Construction	N/A	MM CUL-2	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-2	NEPA Less Than Significant Impact During Construction

Table 7-10 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact CUL-3. Would Alternative 3 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Direct	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM CUL-3. In the event that potential paleontological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified paleontologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include monitoring by a qualified paleontologist during construction-related ground-disturbing activities. The monitor will retain the option to reduce monitoring if it is determined that the sediments were previously disturbed. Monitoring may also be reduced if potentially fossiliferous units are not present or, if present, are determined to have a low potential to contain fossil resources. The monitor will be equipped to salvage fossils and samples of sediments as they are unearthed and will be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Specimens will be curated into a professional, accredited museum repository with permanent retrievable storage. A report of findings, with an appended itemized inventory of specimens, will be prepared and will signify completion of the mitigation.	CEQA Significant and Unavoidable Impact During Construction

Table 7-10 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction
Angels Gate	CEQA Significant Impact During Construction	N/A	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction
Impact CUL-4. Would Alternative 3 (Project) result in disturbance of any human remains, including those interred outside of formal cemeteries?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact CUL-5. Would Alternative 3 (Project) result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s)?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	MM CUL-5. In the event that potentially historic resources, such as shipwrecks, are encountered in the project area during construction activities, work will stop immediately until a qualified archaeologist can assess the significance of the resource and, if necessary, enact appropriate management measures. This may include the initiation of avoidance or buffer zones, or a data recovery program that may include excavation or documentation of the resource.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM CUL-5	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 7-10 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	MM CUL-5	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM CUL-5	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

7.4.6 Alternative 4 (Recommended Alternative)

7.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

7.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years. The construction impacts for rehabilitation of the existing ocean outfalls would be the same as for Alternative 1 (Project).

Impact CUL-1. Would Alternative 4 (Project) cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?

Shaft Site – Royal Palms

<u>Construction</u>

CEQA Analysis

The construction of the onshore tunnel alignment would terminate at the Royal Palms shaft site where the onshore tunnel would be connected to the existing manifold structure at a tunnel crown depth of approximately 30 feet bgs. The existing manifold structure at Royal Palms Beach is part of the Sanitation Districts' existing ocean discharge system. No historic resources have been identified in the CEQA study area around the Royal Palms shaft site. Therefore, impacts would not occur.

The stonewall fragment and posts located at Royal Palms Beach were constructed before 1935 of Altamira shale and retain most of their integrity. Research indicates that the stonewall fragment and posts may date to the same period as the Historic Stone Wall, Fort MacArthur Upper Reservation, which was declared eligible for the CRHR under Criterion 1 in October 2007 (ICF 2007). The stone wall fragment would not be demolished or otherwise altered by the construction, and no impacts would occur.

NEPA Analysis

Environmental impacts within the NEPA study area would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact CUL-2. Would Alternative 4 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property that is an archaeological site pursuant to 36 CFR Section 800.5?

Shaft Site – Royal Palms

Construction

CEQA Analysis

The Royal Palms shaft site has not been previously surveyed. No prehistoric or historic archaeological sites have been recorded at the shaft site. (South Central Coastal Information Center of the California Historical Resources Information System March 2010). There are several recorded archaeological sites within the general vicinity of the Royal Palms shaft site, but these are all located on the bluff top above and to the south east of the shaft site (South Central Coastal Information Center of the California Historical Resources Information System March 2010). Because there are recorded archeological sites in the general area of the shaft site, there is a moderate potential for excavation and grading associated with

shaft excavation to disturb unknown archaeological resources. Furthermore, surface surveys and record search results are generally inconclusive regarding the presence and the exact nature of buried archeological resources within the CEQA study area. It cannot be predicted with certainty whether buried archaeological deposits are present or absent within the Royal Palms shaft site; therefore, shaft construction has the potential to encounter significant unknown buried archaeological resources. Any significant impacts on unknown buried archaeological resources caused during construction activities would be reduced to less than significant through the implementation of MM CUL-2.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM CUL-2.

Residual Impacts

MM CUL-2 would allow for the preservation and recording of a significant prehistoric or historic archaeological resource discovered during construction. Prehistoric and historic archaeological resources in the region are almost always found within the upper 15 of sediment. Because shaft construction would begin with bulldozers, scrapers, and other conventional equipment to remove sediment at the shaft site prior to the use of more unconventional methods, there would be an opportunity to identify, preserve, and record any prehistoric or historic archaeological finds during the preliminary shaft construction. Once shaft construction extends beyond the first 15 feet of sediment, it is highly unlikely any prehistoric or historic resources would be found. Residual impacts would be less than significant.

NEPA Impact Determination

Construction at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) could result in an adverse effect on a historic property that is an archaeological site pursuant to 36 CFR Section 800.5. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM CUL-2.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact CUL-3. Would Alternative 4 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

The tunnel depth for the Figueroa/Western to Royal Palms (onshore) alignment would range from approximately 30 to 450 feet bgs. The geologic formations for this onshore tunnel alignment are similar to those for the Wilmington to SP Shelf (onshore) alignment Pleistocene Lakewood Formation, San Pedro Sand, and Timms Point Silt). Therefore, the CEQA analysis for the this onshore alignment is the same as for the Wilmington to the SP Shelf (onshore) alignment discussed in Alternative 1 (Project). Impacts associated with onshore tunneling on unknown buried paleontological resources would be significant and could not be mitigated.

The onshore tunnel alignment would be constructed underground and would not encounter any unique geologic features. Unique geological features that exist on the surface would not be affected by the subsurface tunneling. Therefore, construction of the onshore tunnel alignment would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis

As discussed in Section 7.2.3.3, the Royal Palms shaft site is situated at the base of a cliff underlain by the Altamira Shale Member of the Monterey Formation. These sediments have a high potential to encompass intact paleontological materials. Excavation at the Royal Palms shaft has the potential to encounter significant buried paleontological resources. Impacts associated with construction would be significant. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant.

The Royal Palms shaft site has undergone grading for construction of an existing parking lot and extensive excavation for the Sanitation Districts' existing manifold structure and existing ocean outfalls, and there are no unique geologic features located within the shaft site area. Therefore, shaft construction would not permanently destroy or disturb any unique geologic features.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) could result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature. Impacts under CEQA would be significant before mitigation. Construction of the onshore tunnel for Alternative 4 (Project) could also result in disturbance or destruction of a unique paleontological resource or site. Impacts under CEQA would be significant, and there is no feasible mitigation to reduce impacts.

Mitigation

Implement MM CUL-3.

Residual Impacts

MM CUL-3 would apply to the disturbance of the natural sediment at each shaft site construction area during the use of conventional excavation equipment. However, once the shaft has been excavated to depths below the groundwater table, conditions would limit effective monitoring and recovery of paleontological resources, and there would be no feasible way to apply MM CUL-3. Furthermore, MM CUL-3 could not be applied during construction of the tunnel. This is because the TBM continually moves forward and offers no opportunity for appropriate monitoring for paleontological resources. Therefore, residual impacts would be significant and unavoidable.

NEPA Impact Determination

Construction at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) could result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of the onshore tunnel for Alternative 4 (Project) could also result in disturbance or destruction of a unique paleontological resource or site. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6), and there is no feasible mitigation to reduce impacts.

Mitigation

Implement MM CUL-3.

Residual Impacts

Residual impacts would be significant and unavoidable, as described under the CEQA impact determination.

Impact CUL-4. Would Alternative 4 (Project) result in disturbance of any human remains, including those interred outside of formal cemeteries?

Shaft Site – Royal Palms

Construction

CEQA Analysis

The Royal Palms shaft site is not known to contain human remains, and no prehistoric or historic archaeological sites have been recorded in this location. Construction at the shaft site would have a very limited potential to encounter unknown human remains interred outside of formal cemeteries. In the highly unlikely event that buried human remains are encountered during excavation at the shaft site, the legal requirements of State Health and Safety Code Section 7050.5 and Public Resources Code 5097.98

would be implemented as discussed in Section 7.3.2.3 and would ensure the appropriate treatment of human remains. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not result in disturbance of any human remains, including those interred outside of formal cemeteries. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not result in disturbance of any human remains, including those interred outside of formal cemeteries. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

7.4.6.3 Impact Summary – Alternative 4

Impacts on cultural resources for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 7-7. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 7-11. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 7-11. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact CUL-1. Would Alternative 4 (Project) cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?				
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 7-11 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Royal Palms	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact CUL-2. Would Alternative 4 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property that is an archaeological site pursuant to 36 CFR Section 800.5?				
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM CUL-2. In the event that buried archaeological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. During cultural resources monitoring, if the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-2	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Significant Impact During Construction	N/A	MM CUL-2	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-2	NEPA Less Than Significant Impact During Construction

Table 7-11 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact CUL-3. Would Alternative 4 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Construction	N/A	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Construction
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM CUL-3. In the event that potential paleontological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified paleontologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include monitoring by a qualified paleontologist during construction-related ground-disturbing activities. The monitor will retain the option to reduce monitoring if it is determined that the sediments were previously disturbed. Monitoring may also be reduced if potentially fossiliferous units are not present or, if present, are determined to have a low potential to contain fossil resources. The monitor will be equipped to salvage fossils and samples of sediments as they are unearthed and will be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Specimens will be curated into a professional, accredited museum repository with permanent retrievable storage. A report of findings, with an appended itemized inventory of specimens, will be prepared and will signify completion of the mitigation.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction

Table 7-11 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Royal Palms	CEQA Significant Impact During Construction	N/A	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM CUL-3	NEPA Significant and Unavoidable Impact During Construction
Impact CUL-4. Would Alternative 4 (Project) result in disturbance of any human remains, including those interred outside of formal cemeteries?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact CUL-5. Would Alternative 4 (Project) result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s)?				
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	MM CUL-5. In the event that potentially historic resources, such as shipwrecks, are encountered in the project area during construction activities, work will stop immediately until a qualified archaeologist can assess the significance of the resource and, if necessary, enact appropriate management measures. This may include the initiation of avoidance or buffer zones, or a data recovery program that may include excavation or documentation of the resource.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM CUL-5	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

7.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an environmental impact report must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

7.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the SJCWRP, WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994).

7.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there could be emergency discharges or sewer overflows into various water courses, as described in Section 3.4.1.5. There would be no impacts on historical or archaeological cultural resources, paleontological resources, or human remains due to such emergency releases. The floodplains for the Wilmington Drain and Dominguez Channel do not contain structures. Therefore, there is no potential to affect historic structures. Because Alternative 5 does not include any construction within the marine environment, there would be no impacts associated with the SP Shelf and PV Shelf or the existing ocean outfalls. Alternative 5 would not have the potential to affect historic buildings and structures because no physical alterations would occur near the Bethlehem Shipyard Historic District.

7.4.7.3 Impact Summary – Alternative 5

Impacts on cultural resources for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 7-7, excluding process optimization. Note that the mitigation measures for Alternatives 1 through 4 (Program) are not applicable to Alternative 5 (Program). There would be less than significant impacts on cultural resources for Alternative 5 (Project).

7.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an EIS must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the

construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.6 and 7.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

7.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

7.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

7.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Impacts for Alternative 6 would be the same as discussed under Alternative 5 (Project); therefore, there would be less than significant impacts on cultural resources for Alternative 6.

7.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on cultural resources resulting from the construction and/or operation of program and/or project elements is provided in Table 7-12. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact before and following mitigation under CEQA and NEPA are also listed in the table.

Table 7-12. Comparison of Significant Impacts and Mitigation for Cultural Resources for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternatives 1, 2, 3, 4, and 5[a] (Program)			
Impact CUL-2. Would Alternatives 1, 2, 3, 4, and 5 (Program) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?			
SJCWRP – Plant Expansion and Process Optimization; POWRP, LCWRP, and LBWRP – Process Optimization; JWPCP – Solids Processing	CEQA Significant Impact During Construction	MM CUL-2. In the event that buried archaeological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include development of avoidance strategies, capping with fill material, or mitigation of impacts through data recovery programs such as excavation or detailed documentation. During cultural resources monitoring, if the qualified archaeologist determines that the sediments being excavated are previously disturbed or unlikely to contain significant cultural materials, the qualified archaeologist can specify that monitoring be reduced or eliminated.	CEQA Less Than Significant Impact During Construction
Impact CUL-3. Would Alternatives 1, 2, 3, 4, and 5 (Program) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?			
SJCWRP – Plant Expansion and Process Optimization; POWRP, LCWRP, and LBWRP – Process Optimization; JWPCP – Solids Processing	CEQA Significant Impact During Construction	MM CUL-3. In the event that potential paleontological resources are discovered during ground-disturbing activities, work will stop in that area and within 30 feet of the find until a qualified paleontologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures may include monitoring by a qualified paleontologist during construction-related ground-disturbing activities. The monitor will retain the option to reduce monitoring if it is determined that the sediments were previously disturbed. Monitoring may also be reduced if potentially fossiliferous units are not present or, if present, are determined to have a low potential to contain fossil resources. The monitor will be equipped to salvage fossils and samples of sediments as they are unearthed and will be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Recovered specimens will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Specimens will be curated into a professional, accredited museum repository with permanent retrievable storage. A report of findings, with an appended itemized inventory of specimens, will be prepared and will signify completion of the mitigation.	CEQA Less Than Significant Impact During Construction

[a] Process optimization would not apply to Alternative 5 (Program). Additionally, all mitigation measures and residual impacts would not apply to Alternative 5 (Program).

Table 7-12 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 1 (Project)			
Impact CUL-2. Would Alternative 1 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?			
Shaft Site – JWPCP East	CEQA Significant Impact During Construction	MM CUL-2	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM CUL-2	NEPA Less Than Significant Impact (Indirect) During Construction
Impact CUL-3. Would Alternative 1 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?			
Tunnel Alignment – Wilmington to SP Shelf (Onshore)	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Tunnel Alignment – Wilmington to SP Shelf (Offshore)	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction
Shaft Site – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM CUL-3	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Impact CUL-5. Would Alternative 1 (Project) result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s)?			
Riser/Diffuser Area – SP Shelf, Existing Ocean Outfalls	CEQA Significant Impact During Construction	MM CUL-5. In the event that potentially historic resources, such as shipwrecks, are encountered in the project area during construction activities, work will stop immediately until a qualified archaeologist can assess the significance of the resource and, if necessary, enact appropriate management measures. This may include the initiation of avoidance or buffer zones, or a data recovery program that may include excavation or documentation of the resource.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM CUL-5	NEPA Less Than Significant Impact (Direct) During Construction

Table 7-12 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 2 (Project)			
Impact CUL-2. Would Alternative 2 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?			
Shaft Site – JWPCP East	CEQA Significant Impact During Construction	MM CUL-2	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM CUL-2	NEPA Less Than Significant Impact (Indirect) During Construction
Impact CUL-3. Would Alternative 2 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?			
Tunnel Alignment – Wilmington to PV Shelf (Onshore)	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Tunnel Alignment – Wilmington to SP Shelf (Offshore)	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction
Shaft Site – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM CUL-3	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Impact CUL-5. Would Alternative 2 (Project) result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s)?			
Riser/Diffuser Area – PV Shelf, Existing Ocean Outfalls	CEQA Significant Impact During Construction	MM CUL-5	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM CUL-5	NEPA Less Than Significant Impact (Direct) During Construction

Table 7-12 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 3 (Project)			
Impact CUL-2. Would Alternative 3 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?			
Shaft Site – JWPCP West, Angels Gate	CEQA Significant Impact During Construction	MM CUL-2	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM CUL-2	NEPA Less Than Significant Impact (Indirect) During Construction
Impact CUL-3. Would Alternative 3 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?			
Tunnel Alignment – Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Tunnel Alignment – Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Direct) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Direct) During Construction
Shaft Site – JWPCP West, Angels Gate	CEQA Significant Impact During Construction	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM CUL-3	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Impact CUL-5. Would Alternative 3 (Project) result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s)?			
Riser/Diffuser Area – PV Shelf, Existing Ocean Outfalls	CEQA Significant Impact During Construction	MM CUL-5	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM CUL-5	NEPA Less Than Significant Impact (Direct) During Construction

Table 7-12 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 4 (Project)			
Impact CUL-2. Would Alternative 4 (Project) cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or result in an adverse effect on a historic property pursuant to 36 CFR Section 800.5?			
Shaft Site – JWPCP West, Royal Palms	CEQA Significant Impact During Construction	MM CUL-2	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM CUL-2	NEPA Less Than Significant Impact (Indirect) During Construction
Impact CUL-3. Would Alternative 4 (Project) result in disturbance or destruction of a unique paleontological resource or site or a unique geologic feature?			
Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Construction	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	No mitigation is feasible.	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Shaft Site – JWPCP West, Royal Palms	CEQA Significant Impact During Construction	MM CUL-3	CEQA Significant and Unavoidable Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM CUL-3	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Impact CUL-5. Would Alternative 4 (Project) result in direct or indirect damage or removal of a significant submerged marine cultural resource or result in alteration or cause change to stable environmental conditions for a significant submerged marine cultural resource(s)?			
Riser/Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	MM CUL-5	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM CUL-5	NEPA Less Than Significant Impact (Direct) During Construction

Chapter 8
GEOLOGY, SOILS, AND MINERAL RESOURCES

8.1 Introduction

This chapter describes existing conditions and regulations related to geology, soils, and mineral resources, including those associated with geologic and seismic hazards, within the study area for the Clearwater Program. It analyzes potential impacts that would result from the implementation of program and project elements; determines the significance of those impacts; and provides mitigation measures, where feasible and if necessary, to reduce or avoid impacts.

Geology and soils issues refer to the compatibility of the physical land with development and include potential hazards associated with earthquake fault rupture, substrate and soil stability, and soil characteristics. This chapter discusses these issues as they pertain to the construction and operation of program and project elements.

Seismic hazard and liquefaction assessments and fault investigations were conducted for the Clearwater Program. The results of these assessments and investigations are documented in studies prepared by Fugro West (refer to Chapter 25) and are incorporated herein by reference.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the geology, soils, and mineral resources impact analysis for each program element is summarized by alternative in Table 8-1.

Table 8-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	C,O
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	C,O
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 8-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	C,O
Biosolids Management	X	X	X	X	X	N/A	O	O
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 8-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 8.4.7 for a discussion of the No-Project Alternative.
[b] See Section 8.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the geology, soils, and mineral resources impact analysis for each project element is summarized by alternative in Table 8-2.

Table 8-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	C,O
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	C,O
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	C,O
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	C,O
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	C,O
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	C,O
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	C,O	C,O
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C,O
JWPCP West			X	X	N/A	N/A	C,O	C,O
TraPac	X	X			N/A	N/A	C,O	C,O
LAXT	X	X			N/A	N/A	C,O	C,O

Table 8-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Southwest Marine	X	X			N/A	N/A	C,O	C,O
Angels Gate			X		N/A	N/A	C,O	C,O
Royal Palms				X	N/A	N/A	C,O	C,O
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	C,O	C,O
PV Shelf		X	X		N/A	N/A	C,O	C,O
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	C,O

[a] See Section 8.4.7 for a discussion of the No-Project Alternative.
[b] See Section 8.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

8.2 Environmental Setting

8.2.1 Regional Setting

8.2.1.1 Geography and Topography

The Joint Outfall System (JOS) provides wastewater conveyance and treatment, solids processing, and biosolids and effluent management for communities within the San Gabriel Valley, the Los Angeles Coastal Plain, and the surrounding mountains and foothills. Geographically, the JOS service area is bound by the San Gabriel Mountains to the north, the Pacific Ocean to the west and south, and the Orange County line and the Puente and San Jose Hills to the east. For purposes of discussion in this chapter, the regional setting is defined by the boundaries of the JOS service area.

Within the region, there are three major rivers – the Los Angeles, the San Gabriel, and the Rio Hondo – that flow southward into the San Pedro Bay. The most significant topographic features are the San Gabriel Valley and the Coastal Plain. The San Gabriel Valley occupies the northeastern portion of the region. This broad, triangular plain descends southward from the San Gabriel Mountains at a slope of roughly 65 feet per mile and covers an area of approximately 170 square miles. The San Gabriel Valley is separated from the Coastal Plain to the south by northwest-trending highlands, including the Puente, Merced, and Repetto Hills. The Whittier Narrows, a hydrologic reference point that is an outlet for the Rio Hondo and the San Gabriel Rivers, lies at the gap between the Puente and Merced Hills.

The Coastal Plain is an alluviated lowland southwest of the Whittier Narrows. The Coastal Plain extends to the Pacific Ocean in all directions, except where interrupted by a few local highlands such as the Baldwin, Dominguez, and Palos Verdes Hills. The Los Angeles, San Gabriel, and Rio Hondo Rivers flow generally southward through the Coastal Plain to the Pacific Ocean along engineered drainage channels.

8.2.1.2 Geology

The JOS service area lies within two geomorphic provinces: the Peninsular Ranges geomorphic province and the Transverse Ranges geomorphic province. The Peninsular Ranges geomorphic province extends

southward from roughly the southern base of the Santa Monica Mountains and the foothills of the San Gabriel Mountains into Baja California and includes the southern portion of the JOS service area. The Transverse Ranges geomorphic province trends east-west along the northern border of the Peninsular Ranges geomorphic province and includes the northern portion of the JOS service area. The Coastal Plain lies within the Peninsular Ranges geomorphic province, while the San Gabriel Valley lies within a transition zone separating these two geomorphic provinces.

The Coastal Plain is characterized by the geologic features of the Peninsular Ranges geomorphic province and is typified by a succession of northwest-trending highlands and intervening valleys. This regional configuration of parallel highland areas is the direct result of ongoing tectonic activity along a series of northwest-trending, predominantly right-lateral strike-slip faults such as the Palos Verdes, Newport-Inglewood, and Whittier-Elsinore Faults. The geologic units directly underlying this portion of the Coastal Plain primarily are composed of Holocene (approximately 11,000 years old) alluvial and shallow marine sediments that were shed from local highlands. These recent deposits are underlain by a thick sequence of middle to upper Cenozoic-Age (approximately 37 million years ago to recent times) marine sedimentary and volcanic rock units, such as the Monterey, Topanga, Puente, and Fernando Formations, which are exposed in the highlands. The sedimentary bedrock sequence overlies metamorphic bedrock.

The San Gabriel Valley is characterized by geologic features of the Transverse Ranges geomorphic province. The east-west-trending San Gabriel Mountains form the northern boundary of the San Gabriel Valley. The Raymond Hill Fault, the Sierra Madre Fault, and the Repetto Hills Fault (bordered on the south by the Whittier Fault) bound the San Gabriel Valley. The San Gabriel Valley floor is primarily composed of recent alluvial fan and stream deposits derived from the surrounding mountains and hills. These recent deposits are underlain by a thick sequence of late Cretaceous-Age (approximately 98 million years old) to Pleistocene-Age (approximately 1.6 million years old) marine and nonmarine sedimentary rock units that are locally intruded by middle Miocene-Age volcanic rocks. The sedimentary sequence overlies the basement complex that ranges from Miocene-Age (approximately 15 million years old) plutonic rocks in the eastern portion of the San Gabriel Valley to Precambrian-Age (approximately 3.8 billion to 570 million years old) plutonic rocks in the northern San Gabriel Valley.

The offshore San Pedro Shelf (SP Shelf) is the broad, wave-cut platform forming the inner edge of the continental shelf. The offshore stratigraphy underlying the shelf includes folded and faulted Miocene through Pliocene (approximately 5.3 million to 1.6 million years old) sedimentary rocks covered by Quaternary marine sediment. The same sequence of Pliocene through Miocene sedimentary rocks underlies the Palos Verdes Shelf (PV Shelf). Much of this sedimentary sequence was encountered during construction of the Sanitation Districts of Los Angeles County's (Sanitation Districts') existing ocean outfalls.

8.2.1.3 Seismicity

The region is seismically active. Seismic risk zones have been developed based on the known distribution of historic earthquakes, evidence of past earthquakes, proximity to earthquake areas and active faults, and frequency of earthquakes in a given area. These zones are generally classified based on peak acceleration from maximum credible earthquakes (Mualchin 1992; Mualchin 1996) or the Uniform Building Code (UBC) Seismic Risk Map of the United States. Because of the number of active faults in Los Angeles County and Southern California, the region is located in the highest risk zone defined by UBC standards (Zone IV).

Potential seismic sources within about a 100-kilometer radius of the region are listed in Table 8-3. Regional faults are shown on Figure 8-1. Locations of significant historical earthquakes are also shown on Figure 8-1.

Table 8-3. Potential Seismic Sources

Fault Zone	Fault Type/ Sense of Movement	Slip Rate (mm per year)	M_W (maximum or range)
Cabrillo	Strike slip/right lateral, normal[a]	0.2/1.0	6.0–6.8
Coronado Banks	Strike slip/right lateral, normal[a]	~2	6.0–7.0
Cleghorn	Strike slip/left lateral	~4	N/A
Cucamonga	Thrust/reverse	5.0/14.0	6.0–7.0
Elsinore	Strike slip/right lateral	1.0/5.0	6.0–7.5
Hollywood	Strike slip/left lateral, reverse	1.0/5.0	5.8–6.5
Los Alamitos	Uncertain	N/A	N/A
Malibu Coast	Reverse slip/reverse	0.2/1.0	N/A
Newport-Inglewood (including Compton Structure)	Strike slip/right lateral	1.0/5.0	6.0–7.2
Oak Ridge (including Northridge)	Thrust/reverse	3.5/6.0	6.5–7.5
Palos Verdes	Strike slip/right lateral, reverse[a]	1.0/5.0	6.0–7.0
Raymond	Strike slip/left lateral, minor reverse	0.2/5.0	6.0–7.0
Redondo Canyon	Strike slip/right lateral reverse[a]	Uncertain	5.8–6.5
San Andreas	Strike slip/right lateral	20/35	6.8–8.0
San Cayetano	Thrust/reverse	1.3/9.0	6.5–7.3
San Clemente	Strike slip/right lateral, some vertical	~1.5	Uncertain
San Gabriel	Strike slip/right lateral	1.0/5.0	Uncertain
San Jacinto	Strike slip/right lateral, minor reverse	7/17	6.5–7.5
San Jose	Strike slip/left lateral, minor reverse[a]	0.2/2.0	6.0–6.5 (local magnitude)
Santa Cruz-Catalina	Strike slip/right lateral, reverse[a]	Unknown	6.5–7.3
Santa Monica	Left lateral reverse	0.27/5.0	6.0–7.0
Santa Susana	Thrust/reverse	5.0/7.0	6.5–7.3
Sierra Madre (including San Fernando)	Thrust/reverse	0.36/4.0	6.0–7.0[b]
Simi-Santa Rosa	Reverse/reverse	Uncertain	N/A
Verdugo	Reverse/reverse	~0.5	6.0–6.8

[a] Sense of movement is indicated by predominant fault movement sense, followed by minor sense of fault movement, where indicated. A minor sense of fault movement is uncertain.
[b] The maximum magnitude is uncertain.
mm = millimeters
M_W = moment magnitude
N/A = not applicable
Sources: USGS 2010; SCEC 2011; Wills et al. (2008); USGS 2008

Significant historical earthquakes offshore Southern California are described by Fugro West (Fugro 2011). The largest offshore event was the 1927 Lompoc earthquake (local magnitude [M_L] 7.3), located about 12 kilometers southwest of Santa Barbara. The Oceanside earthquake (M_L 5.4) of 1986 was perhaps one of the closest offshore earthquakes to the project area. Only far-field earthquakes (i.e., relatively distant earthquakes from the project area) have caused measureable damage in the project area. These events include the Great Fort Tejon earthquake (approximate moment magnitude [M_W] 8.0) of 1857 on the San Andreas Fault, the Long Beach earthquake (M_W 6.4) of 1933 on the Newport-Inglewood

Fault, the San Fernando earthquake (M_W 6.6) of 1971 on the San Fernando Fault, the Whittier-Narrows earthquake (M_W 5.9) of 1987 on the Elysian Park Fault, and the Northridge earthquake (M_W 6.7) of 1994 on a previously unmapped blind thrust fault. Although no significant earthquake has been recorded in the Palos Verdes Fault zone, it poses a significant seismic risk due to the project area traversing the fault zone.

8.2.1.4 Seismic-Related Geologic Hazards

Injury and damage to buildings during earthquakes can result from surface rupture along an active fault, ground shaking from a nearby or distant earthquake, surface settlement, and liquefaction of soils. These hazards and their potential effects are described in this section.

Surface Rupture and Faulting

The hazard of surface rupture is generally limited to land immediately adjacent to an active fault. According to the California Geological Survey (formerly the California Division of Mines and Geology [CDMG]), an active fault is one that has experienced surface displacement within the past 11,000 years (defined geologically as the Holocene epoch). Many of the active faults listed in Table 8-3 cross portions of the JOS service area, and surface rupture along these faults may locally affect JOS facilities. Where the tunnels cross the Palos Verdes and Cabrillo Faults, the tunnels would be susceptible to damage resulting from potential fault rupture displacement (Fugro 2011).

The Palos Verdes Fault is located along the northeast flank of the Palos Verdes Hills approximately 1 to 2 miles southwest of the JWPCP. The fault extends about 62 miles from Santa Monica Bay along the northeastern base of the Palos Verdes Hills, through the Los Angeles Outer Harbor, to the San Pedro Channel south of Newport Beach, and eventually to the Lassuen Knoll, which is a mound on the seafloor about 12 miles offshore of Laguna Beach. The fault offsets Holocene sediments in the Port of Los Angeles and is considered an active fault (Fugro 2011).

Onshore, the Cabrillo Fault appears to be a minor structure subparallel to the Palos Verdes Fault. It intersects the shoreline at Cabrillo Beach and forms a prominent northeast-facing scarp in San Pedro. Little is known of its activity, but the scarp suggests late Pleistocene or Holocene activity. A scarp has been detected on the seafloor suggesting Holocene activity, and the fault has been traced with high-resolution seismic reflection geophysics approximately 6 miles offshore to the southeast from the Palos Verdes Peninsula (Fischer et al. 1987). However, the Cabrillo Fault may represent a bending moment fault, or a splay off the Palos Verdes fault system, that could move concurrently with rupture of the Palos Verdes Fault zone. It is possible that the Cabrillo Fault may represent a non-seismogenic bending moment fault atop the Palos Verdes Anticlinorium. The Cabrillo Fault does not appear to create significant fault rupture hazard. (Fugro 2011.)

Ground Shaking

Earthquake-induced ground shaking is a common phenomenon throughout the region. In the recent past, the Los Angeles region has experienced moderate to large earthquakes, such as the October 1, 1987, Whittier Narrows earthquake ($M_W = 5.9$) and the January 17, 1994, Northridge earthquake ($M_W = 6.7$). These, in addition to other seismic events, have produced significant damage from ground shaking, sometimes at locations far distant from the epicenter. In addition, strong ground motions can cause mass movements (e.g., slumps, landslides, debris flows, turbidity currents, liquefaction, and lateral spreading) that could damage JOS facilities.

Potentially damaging ground shaking can occur distant from the event epicenter, depending on several factors, including:

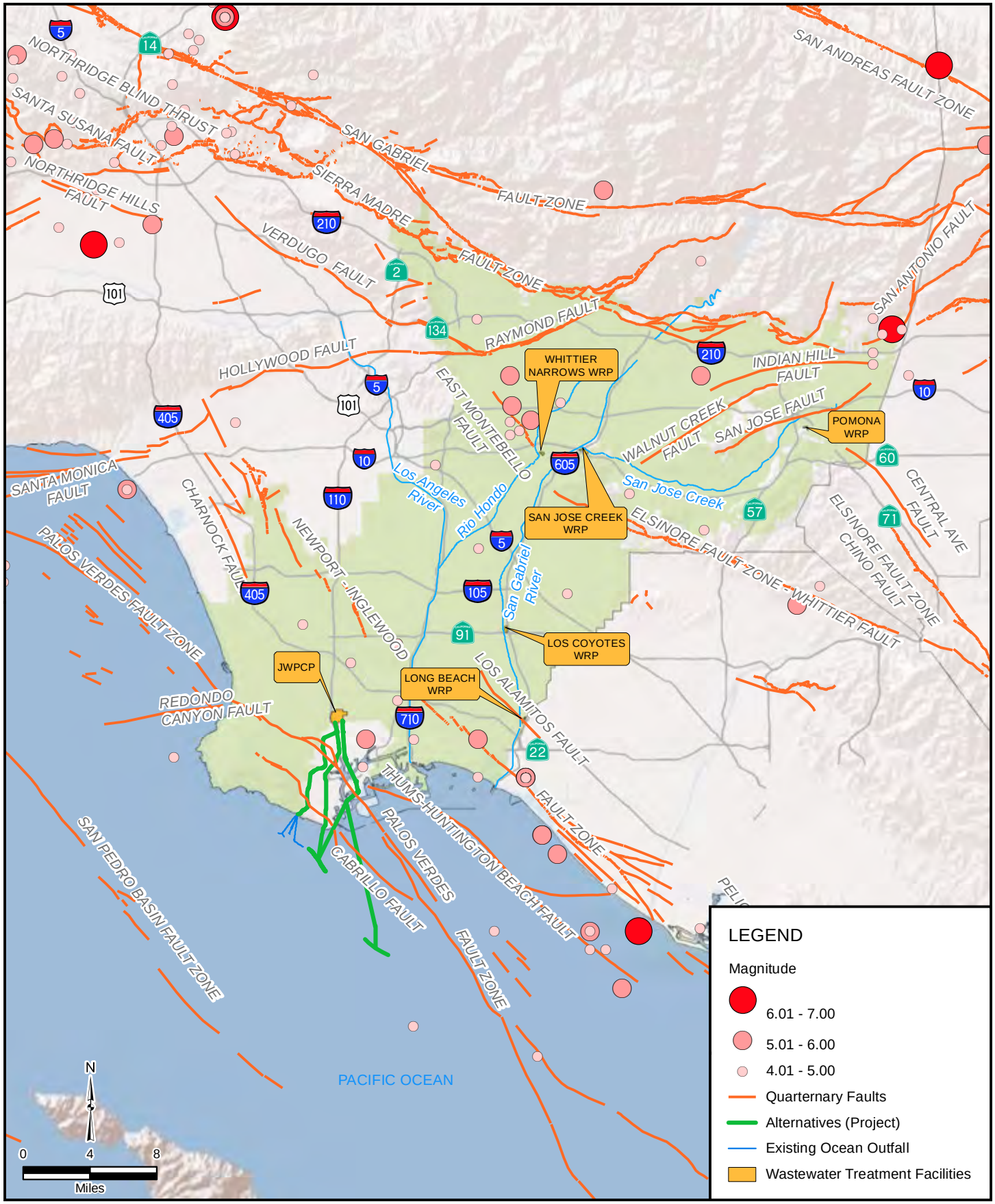


FIGURE 8-1

CLEARWATER Program

Regional Faults and Historical Earthquakes in the JOS Service Area

Source: Sanitation Districts of Los Angeles County 2011, USGS 2010, URS 2011, Thomas Bros. 2011, ESRI 2011

- Earthquake magnitude (i.e., a measure of the total energy released during the fault rupture)
- Epicentral distance (i.e., the source-to-site distance)
- Subsurface geologic conditions between the source and the site
- Subsurface geologic conditions at the site

Wastewater treatment plants, like many other engineered buildings, can be damaged as a result of seismic shaking. Seismic ground shaking recently damaged wastewater facilities and sewers at El Centro and Calexico during the M_W 7.2 April 4, 2010, Mexicali earthquake (El Centro Chamber of Commerce 2010). The 1994 Northridge Earthquake affected water and wastewater facilities (EQE 1994), although Sanitation Districts' facilities within the JOS were not damaged. The September 10, 2010, Christchurch, New Zealand Earthquake (M_W 7.1) damaged the Christchurch wastewater-treatment plant as a result of strong shaking and liquefaction. Large amounts of sand and silt clogged pipes and the plant's primary treatment tanks. The oxidation ponds were also damaged, with cracked and slumped banks (Geotechnical Extreme Events Reconnaissance 2010). The March 11, 2011, Great Tohuku Offshore Earthquake, or Great East Japan Earthquake (M_W 9) triggered tsunami waves that traveled several miles inland damaging at least four wastewater treatment plants (three at Iwate prefecture and one at Sendai city) (Japan Sewer Works Agency 2011). The earthquake produced severe liquefaction resulting in subsidence and shifts in the soil, damaging water, sewer, and gas pipelines (Geotechnical Extreme Events Reconnaissance 2011).

The Palos Verdes Fault zone is perhaps the most significant active fault located within the project area and is capable of generating large-magnitude earthquakes. A large-magnitude earthquake on the Palos Verdes Fault zone would subject the facilities to high levels of strong ground motion. There are numerous other faults near the project area that are also capable of producing high levels of ground motion within the project area, if a significant earthquake were to occur.

Fugro West (Fugro 2011) performed a probabilistic seismic hazards analysis (PSHA) based on a seismotectonic model developed for the project. The modeled seismic sources included all recognized active seismic sources within 62 miles (100 kilometers) of the project area, including the potential sources identified in Table 8-3 based on the geologic, tectonic, and seismological setting of the Southern California region. The PSHA was performed for three return periods (475-, 975- and 2,475-year) at locations specific to project elements. The ranges of estimated peak ground accelerations (PGA) for firm ground at the locations evaluated ranged from:

- 475-year return period: PGA = 0.45 to 0.63g
- 975-year return period: PGA = 0.56 to 0.80g
- 2,475-year return period: PGA = 0.72 to 1.03g

The Palos Verdes Fault zone contributes to the majority of the seismic hazard due to its proximity to the project area (Fugro 2011). The estimated ground motions were found to be highest in the onshore portion of the Palos Verdes Fault and decreased with distance away from the fault. Other seismic sources contribute to the seismic shaking hazard including the Compton Structure, Newport-Inglewood Fault zone, San Pedro Basin Fault system, and the San Pedro Basin Escarpment Fault. The seismogenic characteristics of these sources are described by the Fugro West studies (Fugro 2011).

Liquefaction

Liquefaction in soils and sediments occurs when granular materials are transformed from a solid state to a liquid state as a result of loss of grain-to-grain contact generated during earthquake shaking.

Earthquake-induced liquefaction most often occurs in areas underlain by unconsolidated, saturated sediments. Liquefaction commonly occurs in Holocene- and late Pleistocene-Age saturated soils.

Liquefaction during seismic shaking can result in lateral spreading and permanent ground deformations, a result of liquefaction-induced settlements. Settlement commonly refers to the subsidence caused by consolidation of liquefiable sediments. Lateral spreading is typically associated with liquefaction-induced horizontal ground deformations on mild sloping ground. Horizontal displacements from lateral spreading can be as much as several tens of feet and can have a significant lateral extent (up to several thousands of feet). Lateral spreading can cause significant damage to both overlying and buried infrastructure, such as pipelines. (Fugro 2011.)

The region is characterized as a large, low-lying, alluvial-filled (unconsolidated granular sediment) basin. Some areas within the basin are susceptible to liquefaction. In particular, areas adjoining rivers, river channels, or areas near the shore may have a higher potential for liquefaction due to a relatively high water table in unconsolidated granular sediments. Although portions of the region are susceptible to liquefaction, no incidents of damage to JOS facilities due to liquefying soils have been reported to date.

The Sanitation Districts' existing ocean outfalls are underlain by Holocene sediments, which could undergo liquefaction due to the seismic setting of the area. Based on the Holocene sediments underlying the PV or SP Shelves, the new outfall alternatives could also be subject to the effects of liquefaction, including settlement and lateral spreading. A diffuser alignment underlain by comparatively favorable sediment conditions where differential settlement is minimal and the risk of lateral spreading is minimized has been recommended. Potential diffuser locations along the SP Shelf are considered to be at less risk of liquefaction than the PV Shelf. (Fugro 2011.)

The proposed shaft sites located in the Port of Los Angeles and nearby onshore areas are located in fills placed over Holocene-Age marine or alluvial deposits. The saturated fill soils and Holocene deposits are susceptible to liquefaction from seismic shaking (Fugro 2011). The lateral spreading potential in the Port of Los Angeles and near shore areas is significant, as evidenced from damage at Pier 300 during the 1994 Northridge earthquake where the ground shaking levels were estimated to be 0.10 to 0.15 g (acceleration due to gravity) (Fugro 2011). The alluvial deposits at the JWPCP shaft sites are also prone to liquefaction, but to a lesser degree than the shaft sites within the Port of Los Angeles.

Liquefaction of the soil around a tunnel results in the loss of shear strength of the material that is providing confinement to the tunnel. If this occurred, the buoyancy of the tunnel and lack of confining stress around the tunnel could lead to uplift due to in-site hydrostatic pressure. None of the tunnel alignments pass thorough liquefiable soil; therefore, the tunnels would not be subject to uplift or settlement as a result of liquefaction (Parsons 2011).

8.2.1.5 Nonseismic Geologic Hazards

Geologic hazards independent of seismic activity include landslides and subsidence, which are described herein. Other hazards, including volcanic and geothermal activity, are not discussed because they do not occur in the region.

Landslides

Landslides occur in areas with unstable slopes. Unstable slopes result from erosion, improper construction, overwatering, deep weathering, or structural orientation of geologic formations, and can experience rapid earth movement in the form of a landslide with or without a seismic trigger. Landslides

can occur as rock falls, mud and debris flow, and creeping slopes. The movement can be sudden or gradual.

Both onshore and submarine offshore landslides have been recognized in the project area (Fugro 2011). The largest onshore landslide complexes are on the south flank of the Palos Verdes Peninsula in seaward-dipping bentonite beds in the Altimira Shale Member of the Miocene Monterey Formation. The deepest slide surface is within the Portuguese Bend Tuff, a bentonitic layer about 60 feet thick. The Portuguese Bend landslide complex is a major translational glide landslide, with its toe below sea level on the inner shelf. The Point Fermin and Abalone Cove landslides are other major slide zones. Due to a number of man-made and geologic factors, these slides have been historically unstable on the southern flank of the Palos Verdes Peninsula. None of the project elements are located in or near the Portuguese Bend landslide or other mapped landslides on the Palos Verdes Peninsula (Dibblee 1999).

The offshore continental slope and shelf edge has been affected by large-scale submarine mass movements (Fugro 2011). The larger submarine slide features have head scarps cutting into the steeply inclined continental slope. The irregularity of the shelf break edge is thought to be an expression of submarine mass movements. On the PV and SP Shelves, the bathymetry appears relatively smooth, and shelves are described as being underlain by Holocene sediments forming flat-lying, well-bedded stratigraphic units that overlie folded and faulted Miocene and Pliocene strata. The potential for liquefaction-induced instability within the Holocene sediments has been analyzed in the Fugro West studies (Fugro 2011). However, based on marine geophysical studies, the SP and PV Shelves apparently have been unaffected by deep-seated submarine landslides because slides have not been mapped in these areas (Saucedo et al. 2003). Additional investigations have been recommended to evaluate seismically induced submarine landslides (Fugro 2011).

Subsidence

Measured ground subsidence occurs in areas where groundwater extraction, oil production, or other mining activities have lowered the ground surface. Portions of the southwestern Coastal Plain had significant subsidence problems in the 1940s and 1950s from oil production in the Wilmington Oil Field. Artificial recharge has managed the problem.

8.2.1.6 Soils

One soil group is found in the region: the alluvial fans, plans, and the terraces group. This group consists of 17 soil associations (Jones & Stokes 1994). A soils association is composed of two or more soils in a given geographic area that has a distinctive distribution pattern of soils. Normally, a soil association consists of one or more major soils and at least one minor soil. Soil erosion and expansion are described herein.

Erodible Soils

Soil associations that have a moderate to high erosion potential include the Oceano, Marina-Carey, steeper slope Augora-Placentia, Oak Glenn-Gorman, steeper slope Altamont-Diablo, and San Andreas-San Benito Associations. The Beaches Association has a very high erosion potential. Generally, land in the region that is developed is not highly susceptible to erosion. Areas that are the most susceptible to erosion include steep, unvegetated slopes with erodible soils, which are concentrated in the Puente and Repetto Hills between the San Gabriel Valley and Coastal Plain, and the Palos Verdes Hills located in the southwest portion of the region. However, a low-lying area in the Coastal Plain located immediately north of the Palos Verdes Hills is composed of wind-eroded soils from the Oceano Association.

Expansive Soils

Shrink-swell is that quality of the soil that determines its volume change with change in moisture content. Shrink-swell in soils is measured by the volume change resulting from the shrinking soil when it dries and by the expansion of the soil as it takes up moisture (Jones & Stokes 1994). The volume change behavior of soils is influenced by the amount of moisture change, the amount of clay in the soil, and the type of mineral (e.g., montmorillinite) in the clay. In general, the soil with the highest clay content shrinks and swells the most, although the type of clay is an important contributing factor (Jones & Stokes 1994). Damage to buildings, such as cracking of foundations, could result from differential movements and several alternating periods of shrink and swell. Regionally, three soil associations (Cropley, Ramona-Placentia, and Diablo-Altamont) have soils that are considered highly expansive.

8.2.2 Program Setting

8.2.2.1 Conveyance System

Conveyance system improvements would include numerous trunk sewer relief segments. These sewer improvements are planned throughout the JOS service area and would encounter a wide range of geologic, geotechnical, and soil conditions. Improvements to pipeline segments would be located in low-lying areas, and alluvial conditions would likely predominate most of the geologic settings involved. The primary geologic hazards for many of these locations would include liquefaction, soft or weak soil conditions, and moderate to high levels of ground shaking. Additionally, there may be the potential for crossing localized active faults, such as the Newport-Inglewood Fault zone, and areas susceptible to landslides. Site-specific geotechnical investigations would be needed to characterize the variable conditions along these linear elements, evaluate the potential for geologic hazards, and provide appropriate mitigation.

Soil conditions would vary from site to site and for the entire length of linear elements such as a relief structure. It is anticipated that many of the structures would be built in alluvial areas and that sandy alluvium as well as finer-grained alluvial deposits would be encountered. In the general soils mapping presented by the United States Soil Conservation Service (USSCS), the low-lying alluvial areas are commonly underlain by soils of the Hanford, Chino, and Tujunga-Sobaba Associations (Jones & Stokes 1994). These soils range from fine sand and fine sandy loam to sandy loam to clay loam. Erosion potential for these soils ranges from low to moderate, and the shrink-swell potential ranges from low to moderate.

8.2.2.2 Water Reclamation Plants (San Jose Creek, Pomona, Los Coyotes, Long Beach, and Whittier Narrows) and the Joint Water Pollution Control Plant

A description of the locations of the program facilities are summarized in Table 8-4.

Table 8-4. Geologic Description of Program Locations

Program Facility	Description of Location
SJCWRP	San Gabriel Valley and the floodplain of the San Gabriel River. The Repetto and Puente Formations form the nearby hills.
POWRP	Western portion of the Pomona Valley between the San Jose and Puente Hills. Underlain by alluvium associated with San Jose Creek, which lies to the north of the site.
LCWRP	Los Angeles Basin, floodplain of the San Gabriel River.
LBWRP	Southern margins of the Los Angeles Basin and adjacent to the channelized Coyote Creek just upstream from its confluence with the San Gabriel River.
WNWRP	Puente Hills, Rio Hondo floodplain.
JWPCP	Southern margin of the Los Angeles Basin, floodplain of Los Angeles River.

Geologic hazards that have the potential to affect the program setting are listed by element/location in Table 8-5. Soil associations and geohazard potential for the program are listed by element/location in Table 8-6. The impacts of geologic hazards on program elements are discussed in the environmental analysis for program alternatives, Section 8.4. Details of the program are provided in Chapters 1, 2, and 3.

Table 8-5. Geologic Inventory for Program Locations

Program Element/ Location	Geologic Formation	Nearby Active Fault Zone[a]	Miles From Fault Zone	Depth to Groundwater (feet)	Potential for Liquefaction	Located in a Mapped Landslide Hazard Zone
SJCWRP	200-foot-thick floodplain alluvium over Repetto and Puente Formation[g]	Raymond Hill	7	3–5[b]	No[a,g]	No[a]
		Whittier-Elsinore	3.5			
POWRP	Holocene to late Pleistocene-Age alluvial deposits; adjacent to Elephant Hills, a bedrock knob underlain by landslide-prone Tertiary-Age deposits[c]	Elsinore	7–9	20–30[c]	Yes[c]	Yes[c]
		Sierra Madre	5			
LCWRP	Holocene alluvial deposits of silty sand and silt[g]	Newport-Inglewood	8+	Potentially shallow; can vary up to 35 feet[d]	Yes[d]	No[d]
		Whittier	8+			
LBWRP	Holocene alluvial deposits of silt and clay[e]	Newport-Inglewood	3	20–25[e]	Yes[e]	No[e]
		Palos Verdes	10			
WNWRP	20–200-foot thick Holocene alluvial deposits of sand and gravel; Oligocene nonmarine sediments are adjacent to and possibly under the Holocene alluvium[g]	Whittier	3	Shallow	Yes[b]	No[b]
		Raymond Hill	7			

Table 8-5 (Continued)

Program Element/ Location	Geologic Formation	Nearby Active Fault Zone[a]	Miles From Fault Zone	Depth to Groundwater (feet)	Potential for Liquefaction	Located in a Mapped Landslide Hazard Zone
JWPCP	Alluvium of sand and thin clay interbeds over Pico, Repetto, and Puente Formations; formations consist of porous sand with sandstone and shale interbeds, which commonly contain oil deposits; Jurassic-Age (approximately 208 to 144 million years old) Catalina Schist forms bedrock[g]	Palos Verdes	5+	35–40[h]	No[f,g]	No[f]
		Cabrillo	5+			
		Newport-Inglewood	5+			

[a] See Figure 8-1 for fault locations in the region.

Sources: [b] CDMG 1998a; [c] CDMG 1998b; [d] CDMG 1998c; [e] CDMG 1998d; [f] CDMG 1998e; [g] Jones & Stokes 1994:Geologic Hazards and Soils; [h] Parsons 2011

Table 8-6. General Physical Properties of Soils in the Region

Program Element/ Location	Soil Association	Soil Type	Depth (inches)	Slope (%)	Erosion Potential	Shrink-Swell Potential
WNWRP	Oceano	Sand	60	2–5	Moderate-high	Low
	Marina-Carey	Sand and sandy loam	60	2–15	High	Low
	Tujunga-Sobaba	Fine sand and fine sandy loam	60	0–5	Low-moderate	Low
LCWRP POWRP SJCWRP	Hanford	Sandy loam	60	2.5	Low	Low
LCWRP	Yolo	Silty loam	60	0	Low	Moderate
	Macho-Sorrento	Silty loam	60	2.9	Low-moderate	Moderate
	Cropley	Clay	60	0	Low	High
	Foster	Sandy loam	60	0	Low	Low
WNWRP LBWRP	Chino (with inclusions of the Foster and Grangeville Associations)	Clay loam	60	0	Low	Moderate
JWPCP	Agoura-Placentia	Sandy loam	18–60	2–5	Low-moderate	High
	Agoura-Placentia	Sandy loam	18–60	5–9	Moderate	High
	Ramona-Placentia	Sandy loam	9–60	9–15	High	High
	Perkins-Rincon	Gravelly loam and silty clay loam	60	0–15	Low-moderate	High
	Vista-Amargoss	Sandy loam	14–38	30–50	High	Low
	Oak Glen-Gorman	Sandy loam	60	9–30	Moderate-high	Low

Table 8-6 (Continued)

Program Element/ Location	Soil Association	Soil Type	Depth (inches)	Slope (%)	Erosion Potential	Shrink-Swell Potential
	Diablo-Altamont	Clay	22–51	2–9	Low	High
	Altamont-Diablo	Clay	20–39	9–30	High	High
	Altamont-Diablo	Clay	20–39	30–50	High	High
	San Andreas-San Benito	Sandy loam and clay loam	24–48	30–75	High	Low-moderate
	San Benito-Soper	Clay loam	36–48	30–50	High	Moderate
	Beaches	Sand	Very deep	Varies	Very high	Low

Source: Jones & Stokes 1994

8.2.3 Project Setting

8.2.3.1 Tunnel Alignment

Figure 8-2 shows the depths of the tunnels for the various alignments. The tunnel alignments would cross the Palos Verdes and Cabrillo Faults. A geologic map of the area with the locations of these faults is shown on Figure 8-3a. The geologic map legend is shown on Figure 8-3b. The descriptions of the geologic units in the project area are shown on Figure 8-3c. The subsurface geology of the Palos Verdes Hills is shown on Figure 8-4. Some portions of the tunnel alignments are anticipated to have subsurface geologic settings similar to the Palos Verdes Hills and would encounter similar formations, as shown on Figure 8-4.

Geologic hazards that have the potential to affect the tunnel alignment for the recommended plan or its alternatives are listed by project element in Table 8-7. The impacts of geologic hazards on tunnel alignments are discussed in the environmental analysis for project alternatives, Section 8.4. Details of the tunnel alignments are presented in Chapter 3.

Table 8-7. Geologic Inventory of Hazards Along Tunnel Alignments

Project Element	Geologic Formation	Active Fault Zone Crossing	Fault Zone Crossing Location	Potential for Liquefaction	Located in a Mapped Landslide Hazard Zone
Wilmington to SP Shelf Alignment (Onshore)	Pleistocene (Lakewood Formation, San Pedro Sand, and Timms Point Silt) sediment deposits of unconsolidated sand and silt[a]	Palos Verdes	Crosses between LAXT and Southwest Marine shaft sites	No[a]	No[b,c]
Wilmington to SP Shelf Alignment (Offshore)	Miocene (Monterey Formation) marine sedimentary rock deposits of mudstone, shale, and fine-grained rock extensively folded and faulted with the offshore Palos Verdes Anticlinorium[a]	Cabrillo	Crosses midway across the SP Shelf	No[a]	No[d,f]
Wilmington to PV Shelf Alignment (Onshore)	Pleistocene (Lakewood Formation, San Pedro Sand, and Timms Point Silt) sediment deposits of unconsolidated sand and silt[a]	Palos Verdes	Crosses between LAXT and Southwest Marine shaft sites	No[a]	No[b,c]

Table 8-7 (Continued)

Project Element	Geologic Formation	Active Fault Zone Crossing	Fault Zone Crossing Location	Potential for Liquefaction	Located in a Mapped Landslide Hazard Zone
Wilmington to PV Shelf Alignment (Offshore)	Miocene (Monterey Formation) marine sedimentary rock deposits of mudstone, shale, and fine-grained rock extensively folded and faulted with the offshore Palos Verdes Anticlinorium[a]	Cabrillo	Crosses near Point Fermin	No[a]	No[d,f]
Figueroa/ Gaffey to PV Shelf Alignment (Onshore)	Pleistocene (Lakewood Formation, San Pedro Sand, and Timms Point Silt) sediment deposits of unconsolidated sand and silt, and Miocene (Monterey Formation) marine sedimentary rock deposits of mudstone, shale, and fine-grained rock[a]	Palos Verdes	Crosses southwest of Figueroa Street and John S. Gibson Boulevard intersection	No[a]	No[b,c]
		Cabrillo	North of Angels Gate Park		
Figueroa/ Gaffey to PV Shelf Alignment (Offshore)	Miocene (Monterey Formation) marine sedimentary rock deposits of mudstone, shale, and fine-grained rock[a]	No	Does not cross active fault	No[a]	No[b,c]
Figueroa/ Western to Royal Palms (Onshore)	Pleistocene (Lakewood Formation, San Pedro Sand, and Timms Point Silt) sediment deposits of unconsolidated sand and silt, and Miocene (Monterey Formation) marine sedimentary rock deposits of mudstone, shale, and fine-grained rock[a,e]	Palos Verdes	South of Harbor Regional Park under North Gaffey Street	No[a]	No[c,e,g]
		Cabrillo	Intersection of South Dodson Avenue and Western Avenue		

Sources: [a] Parsons 2011; [b] CDMG 1998e; [c] CDMG 1998f; [d] Fugro 2011; [e] Dibblee 1999; [f] Saucedo et al. 2003; [g] Appendix 8-A

8.2.3.2 Shaft Sites

The shaft site locations are shown on Figure 8-3a in relationship to mapped fault zones and geologic formations. Geologic hazards that have the potential to affect the shaft sites for the recommended plan or its alternatives are listed by project element in Table 8-8. The impacts of geologic hazards on the shaft sites are discussed in the environmental analysis for project alternatives, Section 8.4. Details of the shaft sites are presented in Chapter 3.

FIGURE 8-2

CLEARWATER Program

Tunnel Depths

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

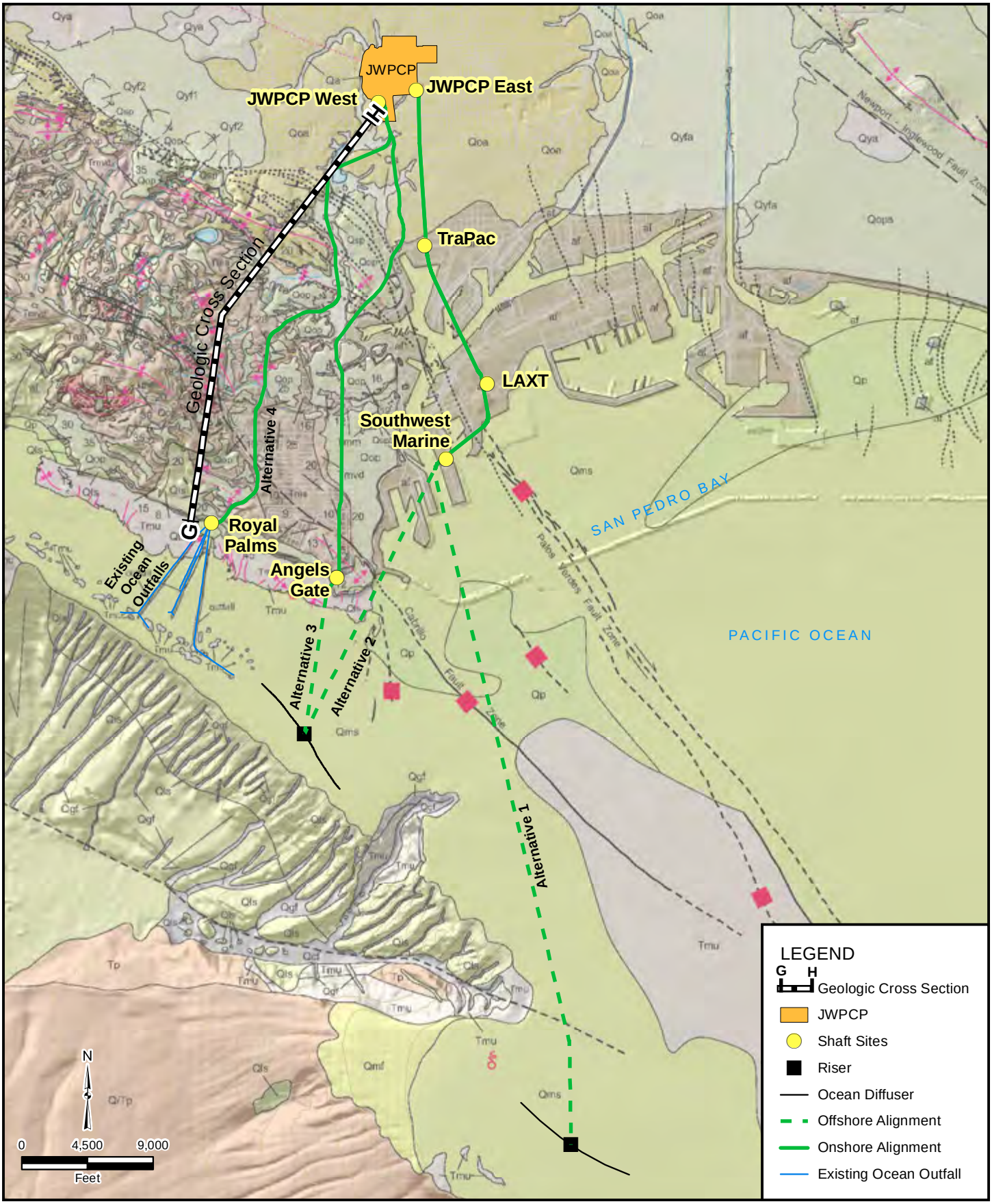


FIGURE 8-3a

CLEARWATER Program

Map of Stratigraphic Relationships for Proposed Tunnel Alignments

Source: Sanitation Districts of Los Angeles County 2011, URS 2011, CA Geological Survey (Geologic Map Long Beach 30x60) 2003

ABBREVIATED EXPLANATION

Approximate stratigraphic relationships only: see accompanying Sheet 2 for correlation of map units and more detailed descriptions.

CENOZOIC

QUATERNARY

HOLOCENE

- af — Artificial fill
- Qw — Active channel and wash deposits
- Qa — Alluvial flood plain deposits
- Qls — Landslide deposits
- Qb — Beach deposits
- Qe — Eolian deposits
- Qpe — Paralic estuarine deposits
- Qyf — Young alluvial fan and valley deposits, undivided a = sand, s = silt, c = clay
- Qyf2 — Young alluvial fan deposits, unit 2
- Qyf1 — Young alluvial fan deposits, unit 1
- Qya — Young alluvial flood plain deposits, unit 1
- Qye — Young eolian deposits
- Qype — Young paralic estuarine deposits
- Qof — Old alluvial fan and valley deposits, undivided a = sand, s = silt, c = clay
- Qoa — Old alluvial flood plain deposits, undivided

PLEISTOCENE

- Qoe — Old eolian deposits
- Qom — Old marine deposits, undivided
- Qop — Old paralic deposits, undivided, a = sand, s = silt, c = clay
- Qlh — La Habra Formation
- San Pedro Formation
  - Qsp — San Pedro Formation, undivided
  - Qspt — Timms Point Silt Member
  - Qspl — Lomita Marl Member
- Qi — Inglewood Formation

TERTIARY

PLIOCENE

- Fernando Formation
  - Tfu — Upper Member
  - Tfl — Lower Member, Tflc = conglomerate
- Puente Formation
  - Tpsc — Sycamore Canyon Member, Tpscc = conglomerate

MIOCENE

- Tpy — Yorba Member
- Tps — Soquel Member
- Tplv — La Vida Member
- Monterey Formation
  - Tmm — Malaga Mudstone Member
  - Tmvd — Valmonte Diatomite Member
  - Tmv — Volcanic rocks within the Monterey Formation
  - Tma — Altamira Shale Member

MESOZOIC

CRETACEOUS JURASSIC

- mcs — Catalina Schist

Offshore Region

- Qms — Unconsolidated shelf sediment
- Qmf — Unconsolidated flank sediment
- Qmb — Unconsolidated basin sediment
- Qmr — Unconsolidated ridge sediment
- Qmc — Unconsolidated canyon sediment
- Qct — Canyon terrace
- Qcf — Canyon fill
- Qgf — Gully fill
- Qf — Fan deposits
- Qls — Landslide deposits
- Qp — Pleistocene sedimentary deposits, undivided
- QTt — Plio-Pleistocene terrace deposits
- Tp — Pliocene sedimentary rocks, undivided*
- Tmp — Mio-Pliocene sedimentary rocks, undivided*
- Tu — Tertiary sedimentary and volcanic rocks, undivided*
- Tmu — Miocene sedimentary rocks, undivided*
- Tmv — Miocene volcanic rocks*
- ms — Metamorphic rocks of pre- Late Cretaceous age*

* Q/ = Map unit overlain by more than 3 meters of unconsolidated Quaternary sediment.

MAP SYMBOLS

Contact - accuracy of location ranges from well located to inferred. All offshore contacts are considered approximately located.

Fault - solid where well located; dashed where approximately located or inferred; dotted where concealed; queried where continuation or existence is uncertain. Where age was determined in offshore area, age symbol is shown astride fault and relative offset is shown by U, upthrown side; D, downthrown side (relative or apparent). Age of faults are indicated as follows:

- cuts strata of Holocene age
- cuts strata of Pleistocene age
- cuts strata of Quaternary age
- cuts strata of Pliocene age
- cuts Miocene or older strata

Anticlinal fold - solid where well located; dashed where approximately located or inferred; dotted where concealed. Plunge direction indicated by arrowhead on fold axis.

Synclinal fold - solid where well located; dashed where approximately located or inferred; dotted where concealed. Plunge direction indicated by arrowhead on fold axis.

Strike and dip of stratified rocks. Number indicates dip angle in degrees when known.

- Inclined beds
- Overturned beds
- Horizontal beds

Strike and dip of metamorphic and igneous foliation.

- Vertical foliation

Arrows on landslides indicate direction of movement. Hachured where headscarp is mappable.

Oil and/or gas seep.

FIGURE 8-3b

CLEARWATER Program

Abbreviated Explanation of Stratigraphic Relationships

Source: California Geological Survey (Geologic Map Long Beach 30x60) 2003

DESCRIPTION OF MAP UNITS

(Onshore Region)

MODERN SURFICIAL DEPOSITS - Sediment that has been recently transported and deposited in channel and washes, on surfaces of alluvial fans and alluvial plains, and on hill slopes and in artificial fills. Soil-profile development is non-existent. Includes:

af — **Artificial fill (late Holocene) -** Deposits of fill resulting from human construction, mining, or quarrying activities; includes engineered and non engineered fill. Some large deposits are mapped, but in some areas no deposits are shown.

Qw — **Active channel and wash deposits (late Holocene) -** Unconsolidated deposits of silt, sand, and gravel, mostly artificially channelized.

Qa — **Alluvial flood plain deposits (late Holocene) -** Active and recently active alluvial deposits along canyon floors. Consists of unconsolidated sandy, silty, or clay-bearing alluvium.

Qls — **Landslide deposits (Holocene and Pleistocene) -** Highly fragmented to largely coherent landslide deposits. Unconsolidated to moderately well consolidated. Most mapped landslides contain scarp area as well as slide deposit. In some areas scarp is shown separately with hatchers. Many Pleistocene age landslides were reactivated in part or entirely during late Holocene. The preponderance of the landslides in the quadrangle have occurred within the Capistrano Formation, however, there are many within the Monterey and Santiago Formations as well.

Qb — **Beach deposits (late Holocene) -** Unconsolidated beach deposits consisting mostly of well-sorted fine- to coarse-grained sand. Locally may include talus.

Qe — **Eolian deposits (late Holocene) -** Unconsolidated eolian deposits. Composed mostly of very well-sorted fine- to medium-grained sand. Gradational into older eolian deposits.

Qpe — **Paralic estuarine deposits (late Holocene) -** Unconsolidated estuarine deposits. Composed mostly of loose to moderately dense fine-grained sand, silt, and clay.

YOUNG SURFICIAL DEPOSITS—Sedimentary units that are slightly consolidated to cemented and slightly to moderately dissected. Alluvial fan deposits typically have high coarse-fine clast ratios. Young surficial units have upper surfaces that are capped by slight to moderately developed pedogenic-soil profiles. Includes:

Qyf — **Young alluvial fan and valley deposits, undivided (Holocene and late Pleistocene) -** Mostly poorly consolidated and poorly sorted clay, sand, gravel and cobble alluvial fan and valley deposits.

Qyf2 — **Young alluvial fan deposits, unit 2 (Holocene and late Pleistocene) -** Four distinct, gently sloping fan-shaped deposits overlying unit 1. Composed mostly of poorly to moderately consolidated and poorly sorted clay, silty clay and sand.

Qyf1 — **Young alluvial fan deposits, unit 1 (Holocene and late Pleistocene) -** Gently sloping, slightly dissected alluvial fan deposits. Composed mostly of poorly to moderately consolidated and poorly sorted silty clay and sand.

Qya — **Young alluvial flood plain deposits (Holocene and late Pleistocene) -** Mostly poorly consolidated, poorly sorted, permeable alluvial flood plain deposits. Composed mostly of soft clay, silt and loose to moderately dense sand and silty sand.

Qye — **Young eolian deposits (Holocene and late Pleistocene) -** Unconsolidated eolian deposits. Composed mostly of fine- and medium-grained sand.

Qype — **Young paralic estuarine deposits (Holocene and late Pleistocene) -** Unconsolidated estuarine deposits. Composed mostly of fine-grained sand and clay.

OLD SURFICIAL DEPOSITS - Sediments that are moderately consolidated and slightly to moderately dissected. Older surficial deposits have upper surfaces that are capped by moderate to well-developed pedogenic soils. Includes:

Qof — **Old alluvial fan and valley deposits, undivided (late to middle Pleistocene) -** Mostly moderately to well-consolidated, moderately sorted sand, clay, and silt.

Qoa — **Old alluvial flood plain deposits, undivided (late to middle Pleistocene) -** Fluvial sediments deposited on canyon floors. Consists of moderately well consolidated, poorly sorted, permeable, commonly slightly dissected gravel, sand, silt, and clay-bearing alluvium. Includes Reddish brown, well-cemented resistant pebbly and gravelly silty sand in the Baldwin Hills and stream terrace deposits in the Torrance quadrangle.

Qoe — **Old eolian deposits (late to middle Pleistocene) -** Poorly consolidated eolian deposits. Composed mostly of dense to very dense well-sorted fine- to coarse-grained sand and silty sand.

Qom — **Old marine deposits, undivided (late to middle Pleistocene) -** Poorly consolidated marine deposits. Composed mostly of fine- to coarse-grained sand.

Qop — **Old paralic deposits, undivided (late to middle Pleistocene) -** Mostly poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of siltstone, sandstone, and conglomerate. These deposits rest on the now emergent wave cut abrasion platforms preserved by regional uplift (a = sand, s = silt, c = clay). Locally may include older alluvium.

SEDIMENTARY AND VOLCANIC BEDROCK UNITS

Qlh — **La Habra Formation, undivided (late Pleistocene) -** Siltstone, thick-bedded friable sandstone, pebbly sandstone, and pebble-cobble conglomerate; locally abundant clasts of platy white siltstone.

San Pedro Formation (early Pleistocene) -

Qsp — **San Pedro Formation, undivided -** Poorly consolidated fine- to coarse-grained sand and silty sand interbedded with thin beds and lenses of gravel. Marine. Also includes fluvial sand and gravel with local beds of clayey-silt in the Baldwin Hills.

Qspt — **Timms Point Silt Member -** Dense sandy silt and silty sand.

Qspl — **Lomita Marl Member -** Marl and calcareous sand and gravel.

Qi — **Inglewood Formation (lower Pleistocene) -** Well-bedded siltstone with interlayered beds of very fine-grained sandstone; locally abundant calcareous and limonitic concretions. Marine.

Fernando Formation (Pliocene and Pleistocene) - Consisting of:

Tfu — **Upper Member -** Massive friable silty and pebbly sandstone interbedded with thin beds of siltstone, massive pebble conglomerate at base; locally abundant angular chips of platy white siltstone. Locally contains limy concretions.

Tfl / Tflc — **Lower Member -** Massive silty sandstone with interbedded pebbly sandstone and conglomerate. Basal conglomerate contains locally abundant angular chips of platy white siltstone. Tflc = conglomerate and sandstone interbedded with Tfl. Includes rocks mapped as Repetto in the Torrance quadrangle by Woodring and others, 1946.

Puente Formation (upper Miocene) - Consisting of:

Tpsc / Tpscc — **Sycamore Canyon Member -** Sandstone with interbedded pebble-cobble conglomerate and sandy siltstone. Tpscc = pebble-cobble conglomerate and pebbly sandstone interbedded with Tpsc.

Tpy — **Yorba Member -** Platy diatomaceous siltstone with interbeds of sandstone, limestone and marl.

Tps — **Soquel Member -** Thick-bedded to massive graded sandstone and siltstone; local lenses of pebble-cobble conglomerate in upper part.

Tplv — **La Vida Member -** Laminated to platy siltstone with interbedded pebbly sandstone; limestone and altered tuff beds in lower portion.

Monterey Formation (middle and upper Miocene) - Constisting of:

Tmm — **Malaga Mudstone Member -** Radiolarian mudstone and diatomite.

Tmvd — **Valmonte Diatomite Member -** Diatomaceous shale, mudstone, and diatomite with beds and lenses of hard, resistant silicified limestone and shale and resistant zones of chert.

Tma — **Altamira Shale Member -** Siliceous shale, silty and sandy shale, cherty shale, chert, siltstone, bituminous shale, diatomaceous shale, diatomite, phosphatic shale, tuffaceous shale, limestone, sandstone, conglomerate , breccia, and silicified limestone and shale.

Tmv — **Volcanic rocks within the Monterey Formation (middle Miocene) -** Consists of basalt, andesite, volcanic breccia, and tuff breccia mainly or completely intrusive.

mcs — **Catalina Schist (pre- late Cretaceous) -** Consists of quartz-chlorite schist, quartz-sericite schist, and quartz-glaucophane schist.

(Offshore Region)

Qms — **Unconsolidated shelf sediment (late Holocene) -** Deposits of mostly unconsolidated sand and silt on the shelf.

Qmf — **Unconsolidated flank sediment (late Holocene) -** Deposits of mostly mud on the slope.

Qmb — **Unconsolidated basin sediment (late Holocene) -** Deposits of mostly mud on the basin floor.

Qmr — **Unconsolidated ridge sediment (late Holocene) -** Deposits of mostly mud on the ridge.

Qmc — **Unconsolidated canyon sediment (late Holocene) -** Deposits of mostly mud on the canyon walls.

Qct — **Canyon terrace (Holocene and Pleistocene) -** Deposits of mixed gravel, sand, and mud on canyon formed terrace.

Qcf — **Canyon fill (Holocene and Pleistocene) -** Deposits of mixed gravel, sand, and mud on the canyon floor.

Qgf — **Gully fill (late Holocene) -** Deposits of mostly mud in gully.

Qf — **Fan deposits (Holocene and Pleistocene) -** Deposits of gravel, sand, and mud at base of slope at mouths of submarine canyons and gullies.

Qls — **Landslide deposits (Holocene and Pleistocene) -** Highly fragmented to largely coherent landslide deposits. Unconsolidated to moderately well consolidated. Most mapped landslides include scarp area as well as slide deposit. In some areas scarp is shown separately with pattern. Preponderance of landslides found in submarine canyons and on steep slopes.

Qp — **Pleistocene sedimentary deposits, undivided (Pleistocene) -** Deposits of mostly unconsolidated sand in nearshore areas of continental shelf.

QTt — **Plio-Pleistocene terrace deposits (Pliocene and Pleistocene) -** Deposits of unconsolidated gravel and sand on low-stand erosional platforms.

Tp — **Pliocene sedimentary rocks, undivided* (Pliocene) -** Sandstone and siltstone, heavily gullied where mapped on the slope.

Tmp — **Miocene-Pliocene rocks, undivided* -** Plutonic and hypabyssal rocks found on the outer banks.

Tu — **Tertiary sedimentary and volcanic rocks, undivided* (Tertiary) -** Sandstone, mudstone, and volcanic rocks found on the outer banks.

Tmu — **Miocene sedimentary rocks, undivided* (middle and upper Miocene) -** Mostly diatomaceous mudstones of the Monterey Formation.

Tmv — **Miocene volcanic rocks* (middle and upper Miocene) -** Mostly within the Monterey Formation.

ms — **Metamorphic rocks of pre-Late Cretaceous age* (Jurassic - Cretaceous) -** Mainly Franciscan Complex.

* Q/ = Map unit overlain by more than 3 meters of unconsolidated Quaternary sediment.

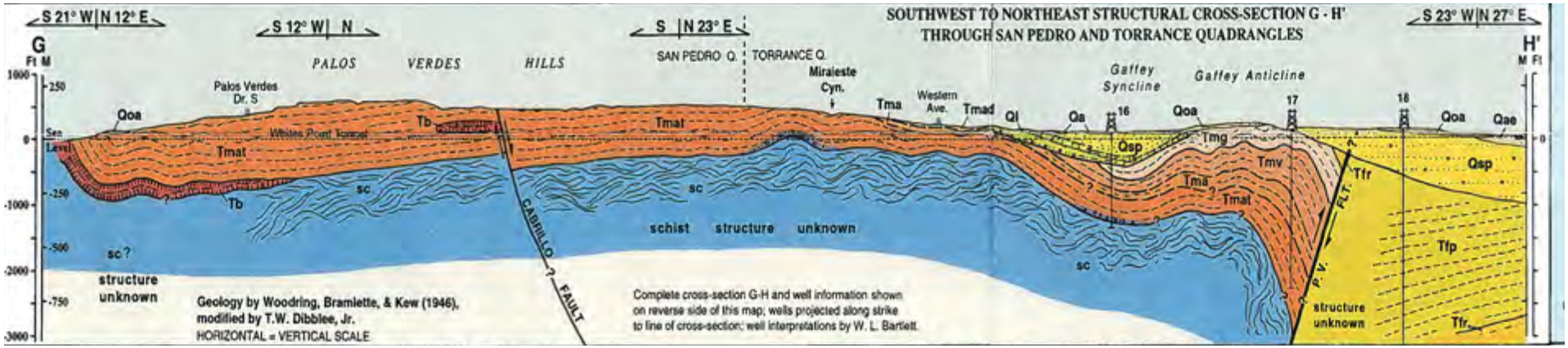
Prepared in cooperation with the U.S. Geological Survey, Southern California Areal Mapping Project

FIGURE 8-3c

CLEARWATER Program

Map Unit Descriptions of Stratigraphic Relationships

Source: California Geological Survey (Geologic Map Long Beach 30x60) 2003



LEGEND

Qya	YOUNGER ALLUVIUM
Qoa	OLDER ALLUVIUM
Qal	ALLUVIUM, ELEVATED
Ql	LOMITA MARL
Qsp	SAN PEDRO SAND
Tfp	FERNANDO FORMATION–PICO MEMBER
Tfr	FERNANDO FORMATION–SILTSTONE/CLAYSTONE
Tb	BASALT
Tma	MONTEREY FORMATION–ALTIMIRA SHALE
Tmat	MONTEREY FORMATION–ALTIMIRIA SHALE (LOWER PART)
Tmad	MONTEREY FORMATION–DIATOMITE
Sc	CATALINA SCHIST

FIGURE 8-4

CLEARWATER Program

Generalized Geologic Cross Section

Source: Modified from Dibblee 1990

Table 8-8. Geologic Inventory of Shaft Sites

Project Element	Shaft Depth (feet)[a]	Geologic Formation	Nearby Active Fault Zone	Miles From Active Fault Zone (approximate)	Depth to Groundwater in Feet (approximate)	Located in a Mapped Liquefaction Hazard Zone	Located in a Mapped Landslide Hazard Zone
JWPCP East	115	Surface fill soils over Pleistocene (Lakewood Formation) sediment deposits of alluvial sands, silts, and clays	Palos Verdes	2	35 – 40[d]	Yes; a small portion of the northeast corner[b]	No[b]
JWPCP West	115 (Alt 3) 140 (Alt 4)	Same as JWPCP East	Palos Verdes	1.5	35 – 40[d]	No; although area just south is mapped as liquefaction zone[b]	No[b]
TraPac	165	Artificial fill over alluvial and marine sediments of the Lakewood Formation and San Pedro Sand	Palos Verdes	0.5	15[d]	Yes[b]	No[b]
LAXT	170	Artificial fill over Holocene (Lakewood Formation) sediment deposits	Palos Verdes	0.5	10[d]	Yes[c]	No[c]
Southwest Marine	170	Artificial fill over Holocene sediment deposits and Timms Point Silt; Malaga Mudstone and Monterey Formation at depths greater than the shaft	Palos Verdes	0.5	10[d]	Yes[c]	No[c]
Angels Gate	245	Fluvial sediments of dense sands and hard clays over the Altimira Shale Member of the Monterey Formation	Cabrillo Palos Verdes	0.5 3	155 (estimated[d])	No[c]	No[c]
Royal Palms	50	Altimira Shale Member of the Monterey Formation	Cabrillo Palos Verdes	1 4	25 (estimated[d])	No[c]	No[c,e]

[a] Approximate depth from ground surface
Alt = alternative
Sources: [b] CDMG 1998e; [c] CDMG 1998f; [d] Parsons 2011; [e] Appendix 8-A

8.2.3.3 Riser/Diffuser Area

The riser and diffuser area would either be located on the SP Shelf or the PV Shelf. The offshore geologic setting and areas of mapped submarine instability are shown on Figure 8-3a, and a geologic map legend is provided as Figure 8-3b.

Geologic hazards that have the potential to affect the riser and diffuser area for the recommended plan or its alternatives are listed by project element in Table 8-9. The impacts of geologic hazards on the riser

and diffuser areas are discussed in the environmental analysis for project alternatives, Section 8.4. Details of the riser and diffuser area are presented in Chapter 3.

Table 8-9. Geologic Inventory of Riser/Diffuser Areas

Project Element	Geologic Formation	Nearby Active Fault Zone	Miles From Fault Zone (approximate)	Potential for Liquefaction	Located in a Mapped Landslide Hazard Zone
Riser/ Diffuser Area – SP Shelf	Quaternary-Age unconsolidated sediment between 35 and 45 feet thick in the diffuser area. The riser would extend into the underlying Late Pleistocene sediment, Fernando Formation, and Monterey Formation.[a]	Palos Verdes	4.5	Yes[a]	No[a,b]
Riser/ Diffuser Area – PV Shelf	Quaternary-Age unconsolidated sediment between 50 and 80 feet thick in the diffuser area. The riser would extend into the underlying Late Pleistocene sediment, Fernando Formation, and/or Monterey Formation.[a]	Palos Verdes	4.5	Yes[a]	No[a,b]
Riser/ Diffuser Area – Existing Ocean Outfalls	Quaternary-Age sediment at the seafloor.[a]	Palos Verdes	5 (from outfall mid point)	Yes[a]	No[a,b]

Sources: [a] Fugro 2011; [b] Saucedo et al. 2003

8.3 Regulatory Setting

8.3.1 Federal

There are no pertinent federal regulations for geologic and seismic hazards assessments.

8.3.2 State

8.3.2.1 Alquist-Priolo Earthquake Fault Zoning Act

The 1972 Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) provided for the delineation of rupture zones along active faults in California. The purpose of the Alquist-Priolo Act is to regulate development on or near fault traces to reduce the hazard of fault rupture and to prohibit the location of most structures for human occupancy across these traces. Cities and counties must regulate certain development projects within the zones, which include withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement. Surface fault rupture is not necessarily restricted to the areas designated as Alquist-Priolo zones.

The Alquist-Priolo Act requires that special geologic studies be conducted to locate and assess the activity level of any fault within a development site. The intent of the law is to minimize damage from fault rupture by avoiding certain types of construction across an active fault. The law requires that some structures, such as private dwellings, be set back at least 50 feet from the mapped trace of an active fault.

8.3.2.2 Seismic Hazards Mapping Act

The California Seismic Hazards Mapping Act, which became law in 1991, was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the state geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design. The California Geological Survey (CGS; formerly the CDMG) has released seismic hazards maps for the Los Angeles area, including the JOS, that include information regarding liquefaction, landslides, and ground shaking.

8.3.2.3 California Building Code

The California Building Standards Code is typically referred to as the California Building Code. California Code of Regulations Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. The California Building Code incorporates by reference the UBC with necessary California amendments. The UBC is a widely adopted model building code in the United States published by the International Conference of Building Officials. About one-third of the text within the California Building Code has been tailored for California earthquake conditions.

8.3.2.4 Storm Water Pollution Prevention Plan

Dischargers whose projects disturb 1 or more acres of soil or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres are required to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Associated With Construction Activity (Construction General Permit). Construction activity subject to this permit includes clearing, grading, and disturbing the ground such as stockpiling or excavation, but regular maintenance activities performed to restore the original line, grade, or capacity of the facility are not included.

The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must list the best management practices (BMPs) the discharger would use to protect storm water runoff and the placement of those BMPs. BMPs in the SWPPP would include measures such as limiting construction activities to the minimum area necessary, using silt fences or straw bales to filter sediment in runoff, revegetating bare soil areas before onset of the wet season, and locating covered material storage areas away from drainage channels. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for nonvisible pollutants to be implemented if there is a failure of BMPs, and a sediment monitoring plan if the site discharges directly to a water body.

If a single project traverses more than one Regional Water Quality Control Board (RWQCB) jurisdiction, a complete Notice of Intent package (which includes a site map and fee payment) and Notice of Termination (upon completion of each section) must be filed for each RWQCB.

8.3.3 Regional

There are no pertinent regional regulations for geologic and seismic hazards assessments.

8.3.4 Local

The safety elements of the general plans for the local cities and the county of Los Angeles contain policies for the avoidance of geologic hazards and/or the protection of unique geologic features. Most municipalities require submittal of construction and operational plans for construction in areas of identified geologic and seismic hazard for review and approval prior to the issuance of permits. County and local grading ordinances establish detailed procedures for excavation and grading required during construction.

8.4 Environmental Impacts and Mitigation Measures

8.4.1 Methodology and Assumptions

Based on the geology underlying the location of a program or project element, the impact assessment, as described in this chapter, considered the following:

- Intensity of an impact, e.g., the extent or magnitude to which a particular impact would affect a given area
- Duration of an impact, i.e., temporary or permanent
- Probability of an impact, e.g., the relative likelihood of large seismic events would be low within the anticipated time frame of construction activities and would increase over the operational life of a facility
- Acceptable risk level, i.e., the level of injury and material/property loss that could potentially occur would be acceptable in view of the cost/benefit of any mitigation

Geologic information was collected from geotechnical reports prepared for the Sanitation Districts by Fugro West. This includes fault investigations; seismic hazard, slope stability, and liquefaction assessments; and site characterization studies (Fugro 2011; Appendix 8-A). Additionally, a limited review of literature and geologic data was conducted that focused on the identification and evaluation of potential geologic and seismic hazards, as cited in the analysis.

The results of Fugro West's preliminary geologic hazards evaluations and seismic design recommendations were evaluated in a feasibility report prepared by Parsons (Parsons 2011). The feasibility report considered potential geotechnical and seismic issues that could affect the design of the facilities and the integrity of the tunnels, shafts, and riser and diffuser for the ocean outfall alternatives. Geologic and seismic considerations for design and construction of project elements were also included in the feasibility report (Parsons 2011).

Based on the Fugro West geotechnical report and the Parsons feasibility report, program and project elements would be designed to accommodate the anticipated ground accelerations at a given site to minimize damage to structures during future earthquakes.

8.4.1.1 Fault Rupture

Fault ruptures are often accompanied by permanent ground displacements at or below the ground surface. These fault displacements impose stresses on structures crossing the fault. Estimates of potential fault displacement based on probabilistic fault displacement analyses and deterministic fault displacement analyses have been prepared (Fugro 2011). The probabilistic techniques are similar to those used for probabilistic estimates of earthquake ground motions. Deterministic evaluations were based primarily on

empirical relations developed by Wells and Coppersmith (1994). Potential fault crossing locations for the proposed tunnel alignment alternatives were evaluated. The estimated fault rupture displacements are highest for the Palos Verdes Fault, while the Cabrillo Fault does not appear to create significant fault rupture hazard (Fugro 2011). The ranges of estimated fault displacement for the locations evaluated are summarized below (Fugro 2011).

- 475-year return period: 0.0 to 0.06 feet
- 975-year return period: 0.0 to 1.3 feet
- 2,475-year return period: 0.3 to 4.9 feet

Fault zone width estimates are important for identifying portions of the tunnel that could be susceptible to damage resulting from potential fault rupture displacement. Within the Palos Verdes Fault zone, a potential broad area of faulting with slip (displacement) occurring on discrete, primary splays within the fault zone was interpreted from the data (Fugro 2011). However, at the depths of the proposed tunnels, a major splay of the Palos Verdes Fault would likely be no more than several feet wide. It may not be possible to identify the master fault splay at all of the proposed tunnel crossings. Therefore, the principal fault displacement should be applied over the entire fault zone width for screening purposes and should not be assigned to a particular fault splay due to the uncertainty in location and activity (Fugro 2011). The estimated fault zone widths of the Palos Verdes Fault zone are summarized below.

- Alternative 1 and 2: 1,310 feet
- Alternative 3: 4,430 feet
- Alternative 4: 6,170 to 7,730 feet

The width of the Cabrillo Fault crossing for Alternative 1 is between 2,000 and 2,100 feet (Fugro 2011). The Cabrillo Fault width at its crossing locations for Alternatives 2, 3, and 4 is currently unknown, but is estimated to be no more than a few hundred feet. The Cabrillo Fault crossing for the selected alternative would be further evaluated during final design.

Fault width is important because it affects the tunnel fault-crossing design strategy for the length of the tunnel to which the design is applied (Parsons 2011). If fault movements can be distributed over a longer distance, it is possible that a more economical and feasible fault crossing can be designed for a given return period. Various fault offset design strategies are discussed in the geotechnical reports (Parsons 2011) because all proposed tunnel alternatives must cross the active Palos Verdes Fault. The fault zone width and style vary with fault crossing location. Depending on the fault crossing location, the fault displacement style ranges from mostly strike-slip (Alternatives 1 and 2) to mostly reverse slip (Alternatives 3 and 4). The orientation of the tunnel-fault zone crossing (i.e., the angle between the tunnel and the fault line) is a key design consideration (Parsons 2011). Depending on the tunnel orientation at the fault crossing location, fault movement could make the tunnel elongate and cause axial tensile strain in the lining, or the tunnel could be shortened and cause axial compressive strain in the lining.

Alternate tunnel fault-crossing design strategies were reviewed, with one-pass and two-pass tunnel lining systems, tunnel diameter, and depth being considered (Parsons 2011). Issues evaluated included allowable fault displacement, shaft locations, tunnel boring machine (TBM) requirements, service interruption, accessibility for repairs after a major earthquake, cost, and other factors. For tunnel alternatives that cross the Palos Verdes Fault zone on Terminal Island (Alternatives 1 and 2), shafts would be required on both sides of the Palos Verdes Fault zone for a tunnel lining system, which would make inspection and any necessary repairs easier along this section of the tunnel following a major seismic

event. (Parsons 2011.) A tunnel lining system would also be installed along the portion of the tunnel that crosses the Palos Verdes Fault to minimize the potential for damage due to fault rupture.

Fugro West performed geologic studies of the onshore Palos Verdes Fault zone in the vicinity of Western Avenue, including the areas of Alternatives 3 and 4 tunnel crossings of the Palos Verdes Fault. The width, offset amount, and sense of movement vary along the Palos Verdes Fault zone between Western Avenue and Terminal Island. The onshore portion of the Palos Verdes Fault near Western Avenue (encompassing the Alternative 3 and Alternative 4 tunnel crossings) is characterized by significant vertical and horizontal displacement components. The tunnel crossings of the Palos Verdes Fault below Terminal Island (Alternatives 1 and 2) would be primarily strike slip with lesser dip slip. (Fugro 2011.)

The geology of the tunnel crossings is extremely complex. The geologic strata along the tunnel route have been extensively faulted, folded, and compressed by tectonic forces. Studies indicate that tunnels in the vicinity of Western Avenue would cross two primary splays of the Palos Verdes Fault zone, each with different fault displacement characteristics. The southern splay is primarily a right-slip fault (mostly horizontal movement would occur), and the northern splay is an oblique reverse fault (movement would be mostly vertical wherein the hanging wall of the fault would be thrust over the footwall). The two splays are about 6,000 feet apart, bounding the Gaffey Street anticline. Secondary faults would be expected in the area bound by the two faults, and secondary fault splays may also exist near the two main splays (i.e., splay faults may occur over potentially wider areas beyond the Gaffey Street anticline). (Fugro 2011.)

Onshore tunnel crossings in the vicinity of Western Avenue (Alternatives 3 and 4) would be susceptible to damage from primary fault rupture involving both strike-slip and oblique reverse displacement. Ground deformations resulting from secondary faulting and folding would be anticipated during a fault rupture event (Fugro 2011).

Additional investigations for the selected tunnel alignment are recommended to better constrain the fault zone width, geometry, style, sense, and amount of displacement should the fault rupture during the lifetime of the proposed facilities. (Fugro 2011.)

For this assessment, potential impacts were evaluated considering the information presented in the reports cited herein, experience with development of ocean outfalls and tunnels, and experts' geologic judgment.

8.4.1.2 Baseline

CEQA Baseline

The California Environmental Quality Act (CEQA) baseline is the existing geologic condition based on review of available geologic and geotechnical literature concerning the geologic setting of the area.

NEPA No-Federal-Action Baseline

The National Environmental Policy Act (NEPA) no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the condition of resources at the year 2022 when construction of project elements under the United States (U.S.) Army Corps of Engineers' (Corps') jurisdiction would conclude.

The analysis assumes that the existing condition of geology, soils, and mineral resources would remain in a comparable state through the completion of construction in 2022. Therefore, the NEPA no-federal-action baseline is the same as the CEQA baseline.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

8.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for geology, soils, and mineral resources (GEO):

GEO-1. Exposes people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure.

GEO-2. Exposes people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault.[1]

GEO-3. Exposes people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking.[1]

GEO-4. Exposes people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking.[1]

GEO-5. Substantially accelerates natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site.

GEO-6. Results in unstable earth conditions or changes in geologic substructure.

GEO-7. Is located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures.

GEO-8. Destroys, permanently covers, or materially and adversely modifies one or more distinct and prominent geologic or topographic features. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands.

GEO-9. Results in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

GEO-10. Results in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on geology, soils, and mineral resources before mitigation. Table 8-10 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 8-10 also identifies thresholds evaluated

[1] Definition of substantial adverse effects and identification of acceptable risk level (less than significant) should reflect prevailing standard of care for geotechnical engineering and engineering geology.

in this EIR/EIS if an emergency discharge into the various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 8-10. Thresholds Evaluated

		Threshold									
	Alt.	**GEO-1**	**GEO-2**	**GEO-3**	**GEO-4**	**GEO-5**	**GEO-6**	**GEO-7**	**GEO-8**	**GEO-9**	**GEO-10**
Program Element											
Conveyance Improvements	1–5		X	X	X	X		X			
SJCWRP Plant Expansion	1–5		X	X		X		X			
SJCWRP Process Optimization	1–4		X	X		X		X			
POWRP Process Optimization	1–4	X	X	X	X	X		X			
LCWRP Process Optimization	1–4		X	X	X	X		X			
LBWRP Process Optimization	1–4		X	X	X	X		X			
JWPCP Solids Processing	1–5		X	X		X		X			
JWPCP Biosolids Management	1–5		X	X							
Project Element											
Wilmington to SP Shelf (onshore tunnel)[a]	1,2	X	X	X	X		X				
Wilmington to SP Shelf (offshore tunnel)	1	X	X	X	X		X				
Wilmington to PV Shelf (onshore tunnel)[a]	1,2	X	X	X	X		X				
Wilmington to PV Shelf (offshore tunnel)	2	X	X	X	X		X				
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3	X	X	X	X		X				
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3	X	X	X	X		X				
Figueroa/Western to Royal Palms (onshore tunnel)	4	X	X	X	X		X				
JWPCP East Shaft Site	1,2	X	X	X	X	X	X	X			
TraPac Shaft Site	1,2	X	X	X	X	X	X	X			
LAXT Shaft Site	1,2	X	X	X	X	X	X	X			
Southwest Marine Shaft Site	1,2	X	X	X	X	X	X	X			
JWPCP West Shaft Site	3,4	X	X	X	X	X	X	X			
Angels Gate Shaft Site	3	X	X	X	X	X	X	X	X		
Royal Palms Shaft Site	4	X	X	X	X	X	X	X	X		
SP Shelf Riser/Diffuser Area	1	X	X	X	X		X	X	X		
PV Shelf Riser/Diffuser Area	2,3	X	X	X	X		X	X	X		
Existing Ocean Outfalls Riser/Diffuser Area	1–4	X	X	X	X		X	X	X		
Emergency Discharge	5,6					X					

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
Alt. = alternative

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears. Additionally, in subsequent alternatives where no new elements are introduced under a specific threshold, that threshold is not repeated.

8.4.3 Alternative 1

8.4.3.1 Program

Impact GEO-1. Would Alternative 1 (Program) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?

Some areas in the JOS service area are bound by slopes that are potentially unstable because of erosion, improper construction, overwatering, deep weathering, or structural orientation of geologic formations. These conditions could result in slope instability or landslide hazards for nearby JOS facilities.

Pomona Water Reclamation Plant – Process Optimization

Construction

The Pomona Water Reclamation Plant (POWRP) is located near Elephant Hill, which could be susceptible to landslides and mudslides (CDMG 1998b). A landslide has been mapped adjacent to the site, and the slopes above the site are characterized as having an earthquake-induced landslide hazard based on seismic hazard mapping (CDMG 1998b). Landslides do not appear to underlie the site based on the available CDMG map (CDMG 1998b). Construction of new facilities could result in the creation of temporary slopes. During construction of the process optimization facilities at the POWRP, construction workers could be exposed to ground failure in this area. Impacts would be significant before mitigation. Implementation of Mitigation Measure (MM) GEO-1 would reduce impacts during construction to less than significant.

Operation

Process optimization would not result in an increase of employees or additional habitable buildings at the POWRP. No impacts would occur during operation.

CEQA Impact Determination

Construction of process optimization at the POWRP for Alternative 1 (Program) would expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure. Impacts would be significant before mitigation. Operation of Alternative 1 (Program) would result in less than significant impacts.

Mitigation

MM GEO-1. Perform geotechnical investigations and provide site-specific recommendations for stabilization of temporary and permanent slopes and excavations to reduce risks to structures and construction workers associated with landslides, mudslides, or ground failure. The geotechnical investigation will address the requirements of local grading ordinances, as appropriate. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.

Residual Impacts

Residual impacts would be less than significant.

Impact GEO-2. Would Alternative 1 (Program) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving rupture of a known earthquake fault?

The proposed conveyance system improvements may involve active fault crossings. None of the water reclamation plants (WRPs), however, are located on or near active faults.

Conveyance System – Conveyance Improvements

Construction

Approximately 33 miles of the conveyance system would be improved within the JOS. The relief trunk sewers planned between the JWPCP and the Whittier Narrows Water Reclamation Plant (WNWRP) may cross traces of the active Newport-Inglewood Fault zone (Hart and Bryant 1997). Conveyance pipelines may cross other faults with the potential for fault surface rupture. Fault rupture, if it were to occur, could affect the integrity of a buried pipeline, and the pipeline could be damaged. However, due to the infrequent occurrence of fault rupture and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit analysis of any mitigation. Impacts would be less than significant.

Operation

The hazard of fault rupture at pipeline/fault crossings would exist during system operation. However, this hazard is typically considered to pose an acceptable level of risk for a sewer conveyance system. That is, the level of material/property loss that could occur from fault rupture of the conveyance system is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion and Process Optimization

Construction

The San Jose Creek Water Reclamation Plant (SJCWRP) expansion site is not near or within a known active fault zone. The Raymond Hill Fault is a potentially active fault located about 7 miles north of the plant, and the Whittier-Elsinore Fault is approximately 3.5 miles south of the site. Neither of these faults crosses the SJCWRP site. Therefore, there would be no risk of fault rupture on site during construction, and there would be no impacts.

Operation

As discussed under construction, the SJCWRP is not near or within a known active fault zone. There would be no risk of fault rupture on site during operation, and there would be no impacts.

Pomona Water Reclamation Plant – Process Optimization

Construction

The POWRP is not near or within a known active fault zone. The Chino and Whittier sections of the Elsinore Fault zone lie to the south and southeast of the site at distances of approximately 7 to 9 miles, respectively. The Sierra Madre Fault zone lies to the north of the site at a distance of approximately 5 miles. Therefore, there would be no risk of fault rupture on site during construction, and there would be no impacts.

Operation

As discussed under construction, the POWRP is not near or within a known active fault zone. There would be no risk of fault rupture on site during operation, and there would be no impacts.

Los Coyotes Water Reclamation Plant – Process Optimization

Construction

The Los Coyotes Water Reclamation Plant (LCWRP) is not near or within a known active fault zone. The Newport-Inglewood and Whittier Faults are the nearest active faults and are 8 miles or more from the LCWRP. Therefore, there would be no risk of fault rupture on site during construction, and there would be no impacts.

Operation

As discussed under construction, the LCWRP is not near or within a known active fault zone. There would be no risk of fault rupture on site during operation, and there would be no impacts.

Long Beach Water Reclamation Plant – Process Optimization

Construction

The Long Beach Water Reclamation Plant (LBWRP) is not near or within a known active fault zone. The nearest active fault zones are the Newport-Inglewood–Rose Canyon and the Palos Verde Faults, located to the southwest of the site at distances of 3 miles and 10 miles, respectively. Therefore, there would be no risk of fault rupture on site during construction, and there would be no impacts.

Operation

As discussed under construction, the LBWRP is not near or within a known active fault zone. There would be no risk of fault rupture on site during operation, and there would be no impacts.

Joint Water Pollution Control Plant – Solids Processing

Construction

The JWPCP is not near or within a known active fault zone. Active faults near the JWPCP include the Palos Verdes, Cabrillo, and Newport-Inglewood Faults, which are located more than 5 miles away. Therefore, there would be no risk of fault rupture on site during construction, and there would be no impacts.

Operation

As discussed under construction, the JWPCP is not near or within a known active fault zone. There would be no risk of fault rupture on site during operation, and there would be no impacts.

Joint Water Pollution Control Plant – Biosolids Management

Operation

Transport of biosolids from the JWPCP would not be significantly affected by fault rupture during operation. There could be some temporary disruption due to fault damage to transportation routes such as roads and bridges, but alternate transportation routes would be available. Therefore, impacts would be less than significant.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving rupture of a known earthquake fault. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact GEO-3. Would Alternative 1 (Program) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?

All Alternative 1 (Program) elements would be potentially subject to strong seismic shaking as a result of earthquakes on nearby or more distant faults. Potential earthquake ground shaking levels are estimated from a regional seismic sources model, as discussed in the seismic hazard zone reports encompassing the WRP locations (e.g., CDMG 1998a). The seismic sources model considers local and regional faults, including those listed in Table 8-5, Table 8-7, Table 8-8, and Table 8-9. Based on the available seismic hazard zone maps (CDMG 1998a, 1998b, 1998c, 1998d), potential seismic shaking levels are shown in Table 8-11. The PGA indicated would be potentially damaging during construction and operation of the proposed facilities.

Estimates of seismic shaking are stated probabilistically in the seismic hazard zone reports for seismic shaking having a 10 percent probability of exceedance in 50 years. This probability approximately corresponds with an average return period of 475 years (i.e., one earthquake every 475 years), and is often used to assess the ground shaking hazard at a given site. Seismic shaking maps such as those included with the California Building Code and seismic shaking maps prepared by the U.S. Geological Survey are based on probabilistic methods.

Site-specific seismic shaking evaluations would be required for earthquake-resistant design and construction, as described for MM GEO-3. The intent of earthquake-resistant design is generally to reduce or minimize earthquake-related damage. Seismic evaluations would consider shaking levels appropriate for site-specific conditions at the various WRPs.

Table 8-11. Peak Ground Acceleration (Program)

WRP	Peak Ground Acceleration (PGA)[a]
SJCWRP	0.49 g to 0.51 g[b]
POWRP	0.54 g[c]
LCWRP	0.43 g[d]
LBWRP	0.45 g[e]
JWPCP	0.52 g[e]

[a] Calculated for a 10 percent probability of exceedence in 50 years
g = acceleration due to gravity
Sources: [b] CDMG 1998a; [c] CDMG 1998b; [d] CDMG 1998c; [e] CDMG 1998d

Conveyance System – Conveyance Improvements

Construction

During seismic shaking, transient loads and deformations are induced on buried pipelines by two components. The first is related to seismic waves in the surrounding soil, and the second is related to the deformation of the pipelines where they connect to other structures. The ability of a buried pipeline to withstand strong ground motions depends upon the intensity and duration of shaking, site-specific geologic conditions, and the material type. Typically, earthquake-induced ground shaking only affects buried pipelines when the shaking induces ground failure, such as settlement or liquefaction, which is addressed under Impact GEO-4. Strong levels of shaking could have adverse effects on people or structures during construction. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

Operation

The conveyance system is located in Southern California, which is a seismically active area; therefore, strong seismic shaking could have adverse effects on buried pipelines and/or pipeline connections during operation and would result in significant impacts. However, the conveyance system would be built in compliance with the most up-to-date building codes required by the state of California and the California Building Code, which would minimize potential impacts. The level of material/property loss that could occur due to earth shaking of the conveyance system is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion and Process Optimization

Construction

The SJCWRP is located in Southern California, which is a seismically active area. Estimates of PGA calculated for the hazard level associated with a 10 percent probability of exceedence in 50 years are 0.49 g to 0.51 g, as shown in Table 8-11 (CDMG 1998a). Strong levels of ground shaking could potentially have adverse effects on people or structures during construction. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically

considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

Operation

The hazard of seismic shaking would exist over the design life of the planned process optimization facilities at the SJCWRP. Strong seismic ground shaking could result in damage to the plant expansion facilities. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

Pomona Water Reclamation Plant – Process Optimization

Construction

Seismic shaking is a hazard in the site area as a result of the proximity of the site to a number of seismic sources. Estimates of PGA calculated for the hazard level associated with a 10 percent probability of exceedence in 50 years are 0.54 g, for the alluvial conditions at the site as shown in Table 8-11 (CDMG 1998b). Strong levels of shaking could potentially have adverse effects on people or structures during construction. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

Operation

The hazard of seismic shaking would exist over the design life of the planned process optimization facilities at the POWRP. Strong seismic shaking could result in damage to the process optimization facilities. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

Los Coyotes Water Reclamation Plant – Process Optimization

Construction

Seismic shaking due to the distance of the LCWRP from local and regional faults may reach a PGA of 0.43 g when calculated for a 10 percent probability of exceedence in 50 years, as shown in Table 8-11 (CDMG 1998c). Strong levels of shaking could potentially have adverse effects on people or structures during construction. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

Operation

The hazard of seismic shaking would exist over the design life of the planned process optimization facilities at the LCWRP. Strong seismic shaking could result in damage to the process optimization facilities. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

Long Beach Water Reclamation Plant – Process Optimization

Construction

Seismic shaking is a hazard in the LBWRP area as a result of the proximity of the site to a number of seismic sources. Estimates of PGA calculated for the hazard level associated with a 10 percent probability of exceedence in 50 years are 0.45 g, for the alluvial conditions at the site as shown in Table 8-11 (CDMG 1998d). Strong levels of ground shaking could potentially have adverse effects on people or structures during construction. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit analysis of any mitigation. Impacts would be less than significant.

Operation

The hazard of seismic shaking would exist over the design life of the planned process optimization facilities at the LBWRP. Strong seismic shaking could result in damage to the process optimization facilities. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

Onsite ground shaking may reach PGA rates of 0.52 g, when calculated for a 10 percent probability of exceedence in 50 years as shown in Table 8-11 (CDMG 1998e). Strong levels of shaking could have adverse effects on people or structures during construction. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit analysis of any mitigation. Impacts would be less than significant.

Operation

The hazard of seismic ground shaking would exist over the design life of the solids processing facilities at the JWPCP. Seismic ground shaking levels used for design could be exceeded during operation, which could result in damage to the facilities. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

Joint Water Pollution Control Plant – Biosolids Management

Operation

Transportation of biosolids from the JWPCP would not likely be affected by seismic ground shaking during operation. Any existing biosolids management facilities being considered for use by the Sanitation Districts have already been assessed and constructed for seismic design. Impacts would be less than significant.

CEQA Impact Determination

Operation of plant expansion at the SJCWRP; process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; and solids processing facilities at the JWPCP for Alternative 1 (Program) could expose people or structures to a substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking. Impacts would be significant before mitigation. Construction of Alternative 1 (Program) would result in less than significant impacts.

Mitigation

MM GEO-3. Perform geotechnical investigations and provide site-specific recommendations for reducing the adverse effects of seismic ground shaking on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey[2] guidelines for evaluating and mitigating seismic hazards in California, and will be in compliance with current building codes, as applicable, to reduce the risk of seismic shaking. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.

Residual Impacts

MM GEO-3 would reduce operational impacts at the WRPs and the JWPCP. Residual impacts would be less than significant.

Impact GEO-4. Would Alternative 1 (Program) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?

The program element structures for the WRPs discussed in this section are typically located in alluvial conditions with geologic settings susceptible to liquefaction during moderate to high levels of ground shaking. If future systems were constructed over sediments with a high potential for liquefaction, measures such as ground improvement, stone columns, or other feasible options would be implemented to reduce the potential adverse effects of liquefaction such as settlement and lateral spreading. The impact of lateral spreading may also be reduced by shallow burial to limit the lateral and frictional forces on the pipeline. Site-specific geotechnical measures would be implemented to reduce liquefaction risks, as described in MM GEO-4.

[2] Previously known as the California Division of Mines and Geology (CDMG).

Conveyance System – Conveyance Improvements

Construction

The conveyance system is located in Southern California, which is a seismically active area. Deposits that are susceptible to liquefaction during strong seismic ground shaking may underlie some reaches of the conveyance system. Liquefaction, if it were to occur, could result in settlement and lateral spreading. These effects could damage buried pipelines and would result in impacts. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit analysis of any mitigation. Impacts would be less than significant.

Operation

The hazard of liquefaction would exist over the design life of the conveyance system. However, this hazard is typically considered to pose an acceptable level of risk for a sewer conveyance system. That is, the level of material/property loss that could occur from liquefaction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

Pomona Water Reclamation Plant – Process Optimization

Construction

The POWRP area is underlain by Holocene-Age, unconsolidated geologic deposits with relatively shallow groundwater conditions (estimated at 20 to 30 feet below ground surface [bgs]) (CDMG 1998b). The site is within an area mapped as having a liquefaction hazard potential (CDMG 1998b). Liquefaction could occur during construction at the POWRP, which could result in damage as a result of settlement or lateral spreading. However, due to the infrequent occurrence of seismic events causing liquefaction and the relatively short duration of construction, the probability that liquefaction would coincide with construction activities is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

Operation

There is a risk of liquefaction that could have an impact on the structure and plant operations if settlement or lateral spreading were not mitigated. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

Los Coyotes Water Reclamation Plant – Process Optimization

Construction

The LCWRP is in a liquefaction hazard zone (CDMG 1998c). This is due to the expected PGAs and potential for shallow groundwater in the Holocene-Age alluvial deposits underlying the site. Hydrograph data from the region indicate that the groundwater elevations can vary as much as 35 feet seasonally (CDMG 1998c). Liquefaction could occur during construction at the LCWRP, which could result in

damage as a result of settlement or lateral spreading. However, due to the infrequent occurrence of seismic events causing liquefaction and the relatively short duration of construction, the probability that liquefaction would coincide with construction activities is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

Operation

There is a risk of liquefaction that could have an impact on the structure and plant operations if settlement or lateral spreading were not mitigated. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

Long Beach Water Reclamation Plant – Process Optimization

Construction

The LBWRP is in a liquefaction hazard zone (CDMG 1998c). The potential for strong ground shaking and the presence of Holocene-Age geologic deposits suggests a potential for liquefaction (CDMG 1998d). Groundwater is anticipated at depths of 20 to 25 feet bgs. Liquefaction could occur during construction at the LBWRP, which could result in damage as a result of settlement or lateral spreading. However, due to the infrequent occurrence of seismic events causing liquefaction and the relatively short duration of construction, the probability that liquefaction would coincide with construction activities is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

Operation

The LBWRP is in a liquefaction hazard zone that could have an impact on the plant through settlement or lateral spreading during its operational life. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

CEQA Impact Determination

Operation of process optimization at the POWRP, LCWRP, and LBWRP for Alternative 1 (Program) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking. Impacts would be significant before mitigation. Construction of Alternative 1 (Program) would result in less than significant impacts.

Mitigation

MM GEO-4. Perform geotechnical investigations and provide site-specific recommendations to reduce the impacts of liquefaction on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.

Residual Impacts

MM GEO-4 would reduce the impacts of liquefaction during operation of process optimization at the POWRP, LCWRP, and LBWRP. Residual impacts would be less than significant.

Impact GEO-5. Would Alternative 1 (Program) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?

Conveyance System – Conveyance Improvements

Construction

The conveyance system improvements would generally be located within existing public rights-of-way in the streets. The potential for soil erosion would be limited in the existing street areas. Trenching during pipeline installation and repair would result in soil disturbance in a relatively narrow corridor along the pipeline route. The movement and temporary stockpiling of excavated soil could result in short-term erosion and sedimentation if improperly handled and stored. However, it is standard practice of the Sanitation Districts to include in the construction specifications for conveyance system improvements a requirement for contractors to comply with the applicable provisions of the State Water Resources Control Board's NPDES Construction General Permit. In accordance with the Construction General Permit, the contractor is required to provide the Sanitation Districts with a site-specific SWPPP that focuses on managing soil disturbance, non-stormwater discharges, construction materials, and construction wastes by identifiable applicable construction BMPs. Therefore, impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

The SJCWRP expansion would be adjacent to the San Gabriel River, where existing treatment facilities are located. The area is flat, and the soils are not highly susceptible to erosion. During construction, earth-moving operations could increase short-term erosion. The storage and movement of soil greatly affects the amount of erosion that occurs. If soil is improperly stored or transported, offsite sedimentation could occur. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

San Jose Creek Water Reclamation Plant – Process Optimization

Construction

Process optimization structures would be located in the existing parking lot and maintained lawn area adjacent to San Jose Creek. The area is flat, and the soils are not highly susceptible to erosion. During construction, earthmoving operations could increase short-term erosion. If soil is improperly handled and stored, offsite sedimentation could occur. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

Pomona Water Reclamation Plant – Process Optimization

Construction

Process optimization structures would be located on vacant disturbed land. The land around the POWRP is developed, and the soils are not highly susceptible to erosion. During construction, earthmoving

operations could increase short-term erosion. If soil is improperly handled and stored, offsite sedimentation could occur. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

Los Coyotes Water Reclamation Plant – Process Optimization

Construction

Process optimization structures would be located within the Iron-Wood Nine Golf Course driving range. The land around the LCWRP is developed, and the soils are not highly susceptible to erosion. During construction, earthmoving operations could increase short-term erosion. If soil is improperly handled and stored, offsite sedimentation could occur. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

Long Beach Water Reclamation Plant – Process Optimization

Construction

Process optimization structures would be located on vacant disturbed land. The area is flat, and the soils are not highly susceptible to erosion. During construction, earthmoving operations could increase short-term erosion. If soil is improperly handled and stored, offsite sedimentation could occur. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

The JWPCP has a wide variety of soils with a low-to-high erodibility potential. Construction of the solids processing digesters would involve cut and fill to a depth of approximately 20 to 30 feet below ground. During construction of new facilities, earthmoving operation could increase short-term erosion at the digester sites. The storage and movement of soil greatly affects the amount of erosion that occurs. If soil is improperly stored or transported, offsite sedimentation could occur. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

CEQA Impact Determination

Construction of Alternative 1 (Program) would not substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact GEO-7. Would Alternative 1 (Program) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?

Conveyance System – Conveyance Improvements

Operation

The conveyance system improvements may be underlain by locally expansive soils, which could deform or damage pipelines during operation. However, during the initial stages of design, it is standard practice of the Sanitation Districts to perform soils borings approximately every 500 feet along proposed sewer alignments prior. The soil borings are analyzed, and the results are used by design engineers to ensure that the appropriate bedding zone and sewer pipe materials are specified to protect against damage caused by expansive soils. Therefore, impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion; San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, and Los Coyotes Water Reclamation Plant – Process Optimization

Operation

Naturally occurring soils at the SJCWRP, POWRP, and LCWRP have a low expansion potential (Jones & Stokes 1994) and have been substantially altered by the introduction of artificial fill and grading for construction of onsite facilities. The USSCS Soil Survey maps the Hanford Association beneath the SJCWRP, POWRP, and LCWRP (Jones & Stokes 1994). Soils of the Hanford Association are typically more than 60 inches deep and have an upper 8-inch surface layer of pale brown sandy loam. Below the upper 8 inches, the substratum is likely to consist of sandy loam and gravel. The soils are reported to have low erosion and shrink-swell potential. However, expansive soils, if present, could damage structures, and impacts would be significant. Impacts would be significant before mitigation. Implementation of MM GEO-7 would reduce the impacts of shrink-swell soil behavior during operation to less than significant.

Long Beach Water Reclamation Plant – Process Optimization

Operation

Naturally occurring soils at the LBWRP have a moderate expansion potential (Jones & Stokes 1994) and have been substantially altered by the introduction of artificial fill and grading for construction of onsite structures. The USSCS Soil Survey maps the Chino Association beneath the LBWRP (Jones & Stokes 1994). Soils of the Chino Association typically consist of loam, silt loam, or clay loam. Erosion potential is low, and the shrink-swell potential is moderate. Expansive soils, if present, could damage structures, and impacts would be significant before mitigation. Implementation of MM GEO-7 would reduce the impacts of shrink-swell soil behavior during operation to less than significant.

Joint Water Pollution Control Plant – Solids Processing

Operation

Naturally occurring soils at the JWPCP have been extensively altered from a number of years of excavation associated with operations, the construction of structures, and the introduction of artificial fill.

Most of the soil consists of clay, silt, and sand, and some artificial fill soils are also present in areas throughout the site. The soils underneath the JWPCP have a moderate expansion potential, although the general area has a high expansion potential affiliated with the Ramona-Placentia Association (Jones & Stokes 1994). Expansive soils, if present, could damage structures, and impacts would be significant before mitigation. Implementation of MM GEO-7 would reduce the impacts of shrink-swell soil behavior during operation to less than significant.

CEQA Impact Determination

Operation of plant expansion at the SJWRP; process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; and solids processing facilities at the JWPCP for Alternative 1 (Program) would be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures. Impacts would be significant before mitigation.

Mitigation

MM GEO-7. Perform geotechnical investigations and provide site-specific recommendations to reduce the risk of adverse effects on structures due to shrink-swell soil behavior. The investigations will include an analysis of soil expansion potential (i.e., American Society for Testing and Materials D-4829). Remediation may include expansive soil removal, reinforced foundations, and/or special pavement design. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.

Residual Impacts

After mitigation, the potential for shrink-swell soils to deform foundations or damage structures during operation would be low. Residual impacts would be less than significant.

8.4.3.2 Project

Impact GEO-1. Would Alternative 1 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

The Wilmington to SP Shelf onshore tunnel profile would be at depths between about 100 and 200 feet bgs. Landslides have not been mapped along the onshore tunnel alignment (Dibblee 1999). The tunnel alignment would not cross ancient landslides and would not result in renewed landslide movement during construction. Deep-seated ground failure is considered a low geologic hazard during construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Landslides have not been identified along the onshore tunnel alignment. During operation, the tunnel would not be affected by landslides or result in renewed movement of a landslide. Deep-seated ground failure is considered a low geologic hazard during operation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

The Wilmington to SP Shelf offshore tunnel profile would be at depths between about 100 and 200 feet bgs or below the seafloor. Landslides or indications of deep-seated submarine mass movements have not been mapped along the offshore tunnel alignment (Fugro 2011). The tunnel alignment would not cross below or near known ancient landslides or areas of past submarine mass movements. Deep-seated ground failure is considered a low geologic hazard during tunnel construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

During operation, the offshore tunnel would not be affected by landslides or deep-seated submarine mass movements because areas of major seafloor instability have not been identified along the tunnel alignment. Deep-seated ground failure is considered a low geologic hazard during operation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

The JWPCP East, Trans Pacific Container Service Corporation (TraPac), Los Angeles Export Terminal (LAXT), and Southwest Marine shaft sites are not in known landslide areas (CDMG 1998e, 1998f); however, construction of the shafts would be in unconsolidated sedimentary formations below the water

table. Excavation instability and/or shaft failure is a construction risk that could result in ground failure in the vicinity of the shaft. Once the shaft is constructed, however, there would be minimal risk of instability during tunnel construction. Impacts would be significant before mitigation. Implementation of MM GEO-1 would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

The JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites are not in known landslide areas (CDMG 1998e, 1998f); therefore, the hazard of ground failure during operation would be low. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

The riser and diffuser area would not be located in areas of past seafloor instability (Fugro 2011). Design geotechnical investigations would be performed to determine the adequate setback from the edge of the SP Shelf. Therefore, ground failure would be a low geologic hazard during construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

The riser and diffuser area would not be located in areas of past submarine mass movements or seafloor instability (Fugro 2011). Therefore, ground failure would be a low geologic hazard during operation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

The existing ocean outfalls are near the edge of the PV Shelf. Major submarine mass movements have occurred at depths below the shelf (on the continental shelf). The irregular seafloor morphology at the PV Shelf edge is thought to represent submarine slide headscarp features resulting from the Palos Verdes debris avalanche deposits (Fugro 2007c). No areas of past seafloor instability or submarine landsliding were identified during geologic mapping of the shelf (Saucedo et al. 2003).

Construction

CEQA Analysis

The existing ocean outfalls are located between about 0.25 and 0.5 miles away (landward) from the edge of the PV Shelf, and are not located in areas of past seafloor instability (Saucedo et al. 2003). Ground failure is considered a low geologic hazard during rehabilitation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

The existing ocean outfalls are not located in areas of past submarine mass movements or seafloor instability (Saucedo et al. 2003). Therefore, as under existing conditions, ground failure would continue to be a low geologic hazard during maintenance of the existing ocean outfalls. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) could expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure. Impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-1.

Residual Impacts

MM GEO-1 would reduce impacts during construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites. Residual impacts would be less than significant.

NEPA Impact Determination

Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) could expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure. Impacts under NEPA would be significant before mitigation with respect to

the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-1.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-2. Would Alternative 1 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault?

Although many active faults are mapped near project facilities (see Table 8-7, Table 8-8, and Table 8-9), the potential for fault surface rupture would only exist for project features that are underlain by or extend across an active fault. Fault rupture, if it were to occur, could result in fault movement and associated deformation of the ground near the fault. None of the proposed shafts are underlain by active faults. The tunnel would cross active faults, as described herein.

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis
The onshore tunnel would not cross a mapped active fault (Hart and Bryant 1997). Therefore, there would be no risk of fault rupture within the alignment during construction, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
The onshore tunnel would not cross a mapped active fault (Hart and Bryant 1997). Therefore, there would be no risk of fault rupture within the alignment during operation, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis
The offshore tunnel would cross the active Palos Verdes Fault between the LAXT and Southwest Marine shaft sites (Parsons 2011). The offshore tunnel also crosses the Cabrillo Fault on the SP Shelf. The

Cabrillo Fault may also be active, but it would likely move only in response to large earthquakes involving the Palos Verdes Fault (Fugro 2011).

Due to the infrequent occurrence of fault rupture and the relatively short duration of construction, the probability that a fault rupture would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from surface fault rupture during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the offshore tunnel could be affected by fault rupture in the event of a large earthquake along the Palos Verdes Fault. A tunnel liner system would be installed along the portion of the tunnel that crosses the Palos Verdes Fault to minimize the potential for damage due to fault rupture. In the event of fault rupture, there could be some damage to the tunnel, and operation could be affected during system repair. Impacts would be significant before mitigation. Implementation of MM GEO-2 would reduce the risk of tunnel damage and facilitate repair following an earthquake to a less than significant level.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

The JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites are not near or within an active fault zone (Hart and Bryant 1997). Therefore, there would be no risk of fault rupture on site during construction, and there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

The JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites are not near or within an active fault zone. Therefore, there would be no risk of fault rupture during operation, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis
The riser and diffuser area would not be located near or within an active fault zone because no faults are mapped in the area (Saucedo et al. 2003). Therefore, there would be no risk of fault rupture on site during construction, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
As discussed under construction, there would be no risk of fault rupture on site, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis
The activities related to rehabilitation of the existing ocean outfalls would not be located near or within an active fault zone because no faults are mapped at the existing ocean outfalls (Saucedo et al. 2003). Therefore, there would be no risk of surface rupture on site during rehabilitation, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
The existing ocean outfalls are not located near or within an active fault zone. Therefore, there would be no risk of surface rupture during maintenance of the existing ocean outfalls, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Operation of the offshore tunnel for Alternative 1 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault. Impacts under CEQA would be significant before mitigation. Construction of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

MM GEO-2. Perform site-specific fault hazard investigations to minimize fault rupture damage and facilitate repair of structures damaged as a result of fault movement. The investigations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. Geologic evaluations of fault crossings will include information to define fault location, fault slip, angle of intersection at the crossing, type of fault slip, width of disturbance, fault dip angle, and design fault displacement. Remediation measures may include engineered backfill, special lining systems, and/or special access provisions for repair. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.

Residual Impacts

Implementation of MM GEO-2 would reduce the risk of offshore tunnel damage and would facilitate repairs. Residual impacts would be less than significant.

NEPA Impact Determination

Operation of the offshore tunnel for Alternative 1 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-2.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-3. Would Alternative 1 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?

Strong ground motions from a significant earthquake could result in considerable damage to the tunnel, shafts, riser and diffuser, and existing ocean outfalls due to seismic wave passage effects (Fugro 2011). Seismic waves can induce transient ground deformations to a tunnel (Parsons 2011). A tunnel's response to ground shaking is usually a combination of compression or extension, longitudinal bending, and ovaling/racking. The tunnel lining would be designed to withstand estimated strains due to seismic shaking so that it can continue to function following a seismic event.

The tunnel, shafts, riser and diffuser, and existing ocean outfalls would potentially be exposed to seismic ground shaking in response to earthquakes on local and regional faults, as shown in Table 8-7, Table 8-8, and Table 8-9. Estimates of PGA for a 475-year return period, 975-year return period, and 2,475-year return period are shown in Table 8-12 (Fugro 2011).

Table 8-12. Peak Ground Acceleration (Project)

Location	Label[b]	Peak Ground Acceleration (PGA)[a]		
		475-Year Return Period (g)	975-Year Return Period (g)	2,475-Year Return Period (g)
JWPCP (East and West)	GS-1	0.57	0.75	1.01
TraPac	GS-3	0.62	0.83	1.12
LAXT	GS-6	0.61	0.82	1.11
Southwest Marine	GS-6	0.61 (estimated)	0.82 (estimated)	1.11 (estimated)
Angels Gate	GS-8	0.55	0.73	0.99
Royal Palms	GS-7	0.56	0.74	0.99
Riser (Alternative 1)	GS-17	0.49	0.69	0.97
Riser (Alternatives 2 and 3)	GS-11	0.48	0.65	0.88

[a] Calculated for a 10% probability of exceedence in 50 years
[b] Ground shaking evaluation location (Fugro 2011)
g = acceleration due to gravity
Source: Fugro 2011

The PGAs indicated in Table 8-12 could be damaging during construction and operation, as discussed herein.

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

The onshore tunnel alignment for Alternative 1 (Project) is in a seismically active area. Strong seismic ground shaking could occur during construction of the tunnel. Seismic ground shaking during construction could damage the tunnel lining and equipment supporting tunnel construction. There is also a risk that earthquake shaking could result in disruption of power, so there would be emergency generators on site to support operation of critical systems such as tunnel ventilation (see Chapter 16 for a discussion of emergency management plans and response). However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

The hazard of seismic shaking would exist over the design life of the tunnel. The relative likelihood of strong seismic shaking during operation would be greater than that during construction due to the increased time frame of seismic exposure during the design life of Alternative 1 (Project). Buried

structure connections can be vulnerable to seismic shaking. Proper seismic design would allow buried structures to withstand seismic ground shaking without significant damage. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

The offshore tunnel alignment for Alternative 1 (Project) is in a seismically active area. Strong seismic ground shaking could occur during construction of the tunnel. Seismic ground shaking during construction could damage the tunnel lining and equipment supporting tunnel construction. There is also a risk that earthquake shaking could result in disruption of power, so there would be emergency generators on site to support operation of critical systems such as tunnel ventilation (see Chapter 16 for a discussion of emergency management plans and response). However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

The hazard of seismic shaking would exist over the design life of the tunnel. The relative likelihood of strong seismic shaking during operation would be greater than during construction due to the increased time frame of seismic exposure during the design life of Alternative 1 (Project). Buried structure connections can be vulnerable to seismic shaking. Proper seismic design would allow buried structures to withstand seismic shaking without significant damage. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

Strong seismic ground shaking during construction could result in damage to the JWPCP East, TraPac, LAXT, and Southwest Marine shaft excavation temporary support systems. Seismic ground shaking could also damage onsite support facilities such as the TBM cooling water tower, generators and substations, ventilation systems, cranes, and possibly other facilities. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activity is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Once the permanent access structure is constructed below the ground surface, there would be some potential for damage as a result of seismic shaking. The hazard of seismic shaking would exist over the design life of the buried access structure. The relative likelihood of strong seismic shaking during operation would be greater than that during construction due to the increased time frame of seismic exposure during the design life of Alternative 1 (Project). Buried structure connections can be vulnerable to seismic shaking. Proper seismic design would allow buried structures to withstand seismic ground shaking without significant damage. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

Construction of the riser would require a jack-up platform and supporting facilities, such as a crane during installation of the riser casing. Strong seismic ground shaking could affect the platform or supporting facilities on the platform. The riser itself would be driven or hydro-jetted into consolidated materials below the seafloor. Temporary excavation works, such as sheet piling, could be damaged by seismic ground shaking.

The diffuser would be constructed from an anchored derrick barge, which would not be affected by seismic shaking. Some seafloor grading or dredging may be used to construct the diffuser. The dredge

materials would be sidecast, if feasible. Significant impacts could result from failure of excavation support, disruption of power, and/or damage to offshore platforms. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activity is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Once the riser is constructed, there would be minimal risk of earthquake damage to the riser itself because construction support facilities would be removed and the permanent riser casing would be in place below the seabed. Strong seismic ground shaking could result in damage at the riser/diffuser connection at the seabed or at the riser/tunnel connection at depth.

The diffuser would be placed on a roadbed base of ballast rock. The roadbed ballast rock could experience settlement during seismic ground shaking. Differential settlement of the ballast rock could result in some deformation of the diffuser pipeline. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

The potential effects of seismic shaking could produce hoop and axial forces resulting in bending and buckling of the Sanitation District's existing ocean outfalls pipelines. The 60-inch, 72-inch, and 90-inch outfalls were constructed with cast iron joints, which limit the deflection and rotation of the pipeline under differential settlement during a seismic event. The pipe segments for the 120-inch outfall consist of a bell and spigot joint, but were placed relatively tight against each other, which result in nominal gaps between the pipe segments that would not allow any substantial rotation during a seismic event. As a result of seismic ground shaking, these conditions could lead to leakage and eventual undermining of the pipe segments due to scouring of the fine sediments. In general, the survival of the existing 120-inch outfall during an earthquake should be better than that of the other outfalls because the concrete bell and spigot pipes have a stronger mechanical connection. (Parsons 2011.)

Rehabilitation work for Alternative 1 (Project) to the existing ocean outfalls would include joint repairs, lining, and/or re-ballasting. Such work would be designed to decrease the risks associated with seismic hazards.

Construction

CEQA Analysis
The rehabilitation work would be performed from an anchored derrick barge, which would not be affected by seismic shaking. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis
Once the existing ocean outfalls are rehabilitated, there would be some potential for damage as a result of seismic shaking. However, this hazard is considered to pose an acceptable level of risk for the existing ocean outfalls system. That is, the level of material/property loss that could occur from seismic shaking is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Operation of the onshore and offshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the riser and diffuser on the SP Shelf for Alternative 1 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking. Impacts under CEQA would be significant before mitigation. Construction of Alternative 1 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-3.

Residual Impacts
Risks associated with ground shaking during operation of the onshore and offshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the riser and diffuser on the SP Shelf would be reduced with implementation of MM GEO-3. Residual impacts would be less than significant.

NEPA Impact Determination

Operation of the onshore and offshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the riser and diffuser on the SP Shelf for Alternative 1 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 1 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-3.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-4. Would Alternative 1 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?

Alternative 1 (Project) elements would be located in a seismically active area and could be exposed to strong, potentially damaging levels of seismic shaking. Based on the geologic setting, the potential for liquefaction exists at the project facilities as summarized in Table 8-7, Table 8-8, and Table 8-9. Liquefaction could result in settlements or lateral spreading. The tunnels, however, would be in sedimentary formations such as the Pleistocene-Age Lakewood Formation or the Miocene-Age Monterey Formation at depths below potentially liquefiable materials (Parsons 2011). The shaft sites located in alluvial and/or filled ground with shallow water table conditions are in geologic settings subject to liquefaction (Fugro 2011; CDMG 1998f). The riser and diffuser area is also underlain by potentially liquefiable sediments (Fugro 2011).

Seismically induced liquefaction settlement could result in downdrag forces along the sides of subsurface structures, such as the shafts and access structures (Fugro 2011). Lateral spreading could produce sustained horizontal loads and reduction of resisting soil pressures that could act on opposite sides of the structures, resulting in structure damage. Liquefaction would also result in reduction of strength of materials, which in turn would lead to reduction in resisting soil pressures surrounding deep founded structures during a large earthquake. The reduction in soil pressure could result in increased stresses and strains, which could be damaging to subsurface structures, such as the shafts and access structures.

Liquefaction, seismically induced settlements, and lateral spreading should be considered for design of shafts, drop structures, and riser and diffuser (Fugro 2011).

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

The onshore tunnel would be in Pleistocene sedimentary formations below the regional water table. Pre-Holocene deposits (such as those at the depth of the tunnel) are generally not considered susceptible to liquefaction (CDMG 1997). The liquefaction potential is low and would not present a significant geologic hazard during construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

The liquefaction hazard would be low during operation of the tunnel, as described for construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

The offshore tunnel would be in Pleistocene and Miocene sedimentary formations, which are not liquefiable. Therefore, liquefaction would not present a significant geologic hazard during construction, and impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

The offshore tunnel would be in Pleistocene and Miocene sedimentary formations, which are not liquefiable. Therefore, liquefaction would not present a significant geologic hazard during operation, and impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – JWPCP East

Construction

CEQA Analysis

The JWPCP East shaft site is underlain by saturated Holocene alluvium, and a small portion of the site is located near a mapped liquefaction zone (CDMG 1998f). The site may have some susceptibility to liquefaction during strong seismic shaking. The shaft site is relatively flat, and the potential for lateral spreading is low; however, liquefaction-induced settlement of unconsolidated alluvium could damage the shaft and support facilities. However, due to the infrequent occurrence of seismic events causing liquefaction and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit analysis of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at this shaft site. During operation, seismic shaking could result in liquefaction. Liquefaction-induced settlements could damage the access structure and the tunnel/access structure connection. This would be a significant impact before mitigation. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – TraPac

Construction

CEQA Analysis

The shaft site is underlain by saturated Holocene alluvium, which may have susceptibility to liquefaction during strong seismic shaking (CDMG 1998f). The shaft site is relatively flat, and the potential for lateral spreading is low. Liquefaction-induced settlements, however, could damage the shaft and support facilities. However, due to the infrequent occurrence of seismic events causing liquefaction and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at this shaft site. During operation, seismic shaking could result in liquefaction. Liquefaction-induced settlements could damage the access structure and the tunnel/access structure connection. This would be a significant impact before mitigation. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – LAXT

Construction

CEQA Analysis

The shaft site is underlain by saturated, hydraulic fill soils, which are susceptible to liquefaction during strong seismic shaking (CDMG 1998f). Although the shaft site is relatively flat, there may be some potential for lateral spreading. Liquefaction-induced settlements and lateral spreading could damage the shaft and onsite support facilities. However, due to the infrequent occurrence of seismic events causing liquefaction and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at this shaft site. During operation, seismic shaking could result in liquefaction. Liquefaction-induced settlements could damage the access structure and the tunnel/access structure connection. This would be a significant impact before mitigation. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Southwest Marine

Construction

CEQA Analysis

The shaft site is underlain by saturated, hydraulic fills which are susceptible to liquefaction during strong seismic shaking (CDMG 1998f). The shaft site is adjacent to harbor shoreline structures, which may be designed to resist liquefaction; however, there may be some potential for lateral spreading. Liquefaction-induced settlements and lateral spreading could damage the shaft and support facilities. However, due to the infrequent occurrence of seismic events causing liquefaction and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is

low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at this shaft site. During operation, seismic shaking could result in liquefaction. Liquefaction-induced settlements and lateral spreading could damage the access structure and the tunnel/access structure connection. This would be a significant impact before mitigation. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

The riser and diffuser area is a relatively flat area of the upper slope of the southwest edge of the SP Shelf. To prepare for riser installation, unconsolidated seafloor material would be removed. The jack-up platform legs may be underlain by some thickness of potentially liquefiable material, which could settle if liquefaction were to occur (although typically, the platform could level itself if tilting occurred as a result of liquefaction). There could be some disruption of support facilities on the platform. The riser itself would be driven or hydro-jetted into consolidated materials below the seafloor, which would not be liquefiable. Temporary excavation works, such a sheet piling, could be damaged by liquefaction.

The diffuser may be underlain by a varying thickness of potentially liquefiable Holocene sediment. The diffuser could be impacted by lateral spreading if strong seismic shaking were to occur (Fugro 2011).

The offshore areas where the diffuser would be located are underlain by potentially liquefiable marine sediment (Fugro 2011). Liquefaction can result in lateral spreading on gentle slopes. Lateral spreading hazards exist at the diffuser area (Fugro 2005a, 2005b). However, due to the infrequent occurrence of seismic events causing liquefaction and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from liquefaction during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

The diffuser may be underlain by a varying thickness of potentially liquefiable Holocene sediment (Fugro 2011). The diffuser could be affected by lateral spreading if strong seismic shaking were to occur (Fugro 2011). Impacts would be significant before mitigation. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Holocene sediments, estimated to be 50 to 80 feet thick, underlie the existing ocean outfalls. The thickness decreases towards the edge of the PV Shelf. The seabed slopes below the existing ocean outfalls on the PV Shelf range from 1 to 4 degrees. The Holocene sediments are primarily silts that are susceptible to liquefaction under strong ground shaking from an earthquake. Liquefaction of the sandy silt material could result in settlement and lateral spreading. Vertical settlements are estimated to range between 6 and 18 inches for the 2,475-year event. Lateral spreading may range up to 5 to 7 feet for the 2,475-year event. (Fugro 2011.)

Various construction methods were used to build the existing ocean outfalls, including trenches excavated to varying depths below the seabed (in the nearshore areas, the trenches are in native rock) and placement of the outfall pipe and diffuser directly on the sandy seabed with ballast rock placed up to the pipe spring line. Surveys of the outfall from the 1990s revealed significant losses of small ballast rock, likely the result of storm wave action. A number of outfall repairs implemented in the 1990s helped restore ballast (Parsons 2011). Rehabilitation to the existing ocean outfalls for Alternative 1 (Project) could include joint repairs, lining, and/or re-ballasting.

A concern with placement of outfall pipe sections directly on the ocean floor is the risk of differential settlement during a significant seismic event. The existing ocean outfalls are located in an area of potential high seismicity, and the diffuser locations are underlain by liquefiable soils near the edge of the continental shelf break. Under strong seismic shaking, the sediments underlying the existing ocean outfalls are susceptible to liquefaction. The resulting settlement and lateral spreading is a significant hazard to the existing ocean outfalls and diffuser. (Parsons 2011.)

The main damages associated with seismically induced differential settlement and seismically induced lateral spreading are joint leakage, loss of ballast, and opening or breaking of pipe joints (Parsons 2011). The existing ocean outfalls would be subjected to significant stresses and strains due to differential movements of the seabed as a result of lateral spreading. Differential movements could develop in the lateral spreading mass. The portions of the outfall that are embedded in competent (non-liquefiable) materials in a trench could be subjected to significant lateral forces as the surrounding lateral spreading mass displaces laterally. Therefore, liquefaction-induced settlement and lateral spreading are significant seismic hazards to the existing ocean outfall pipelines and diffusers (Parsons 2011).

Construction

CEQA Analysis
Liquefaction could result in settlement or lateral spreading, which could affect the existing ocean outfalls. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that liquefaction would coincide with construction activities is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis
During operation, liquefaction and lateral spreading could occur as a result of strong seismic shaking. This event could have a number of impacts on the existing ocean outfalls, as previously discussed. However, this hazard is considered to pose an acceptable level of risk for the existing ocean outfalls system. That is, the level of material/property loss that could occur from liquefaction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Operation of the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites and the riser and diffuser on the SP Shelf for Alternative 1 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking. Impacts under CEQA would be significant before mitigation. Construction of Alternative 1 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-4.

Residual Impacts
MM GEO-4 would reduce the risk of liquefaction during operation at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites and the riser and diffuser on the SP Shelf. Residual impacts would be less than significant.

NEPA Impact Determination
Operation of the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites and the riser and diffuser on the SP Shelf for Alternative 1 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking. Impacts under NEPA

would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 1 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-4.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-5. Would Alternative 1 (Project) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?

Shaft Site – JWPCP East

Construction

CEQA Analysis
The shaft construction area is flat. The soils at the JWPCP East shaft site have a low-moderate to high erosion potential (Table 8-6). During construction, earthmoving operations could increase short-term erosion. If soil is improperly handled and stored, sedimentation could occur, resulting in a significant impact. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – TraPac

Construction

CEQA Analysis
The shaft construction area is flat and is underlain by artificial fill soils (Parsons 2011). During construction, earthmoving operations could increase short-term erosion. If soil is improperly handled and stored, sedimentation could occur, resulting in a significant impact. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – LAXT

Construction

CEQA Analysis

The shaft construction area is flat, and the soils are not highly susceptible to erosion. During construction, earthmoving operations could increase short-term erosion. If soil is improperly handled and stored, sedimentation could occur, resulting in a significant impact. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Southwest Marine

Construction

CEQA Analysis

The shaft construction area is flat and is underlain by artificial fill soils (Parsons 2011). During construction, earthmoving operations could increase short-term erosion. If soil is improperly handled and stored, sedimentation could occur, resulting in a significant impact. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition off site. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not substantially accelerate natural processes of wind and water erosion and sedimentation, potentially resulting in sediment runoff or deposition off site. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact GEO-6. Would Alternative 1 (Project) result in unstable earth conditions or changes in geologic substructure?

Excavations for project facilities such as tunnels or shafts can potentially cause unstable earth conditions and changes in geologic substructure that can result in collapse or settlement of overlying or adjacent geologic materials (i.e., unconsolidated sediments) and consequent damage to any structures that are constructed upon these materials. The potential for subsidence to develop over a tunnel excavation and its influence on buildings in the settlement zone is an important concern for any tunnel project.

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis
The onshore tunnel could be constructed in unconsolidated sediments. Ground settlement could occur during tunneling in unconsolidated sedimentary formations, such as the Lakewood Formation or the San Pedro Formation, which would be encountered along the entire length of the onshore tunnel. These formations are prone to raveling and/or flowing ground behavior below the water table (Parsons 2011). Excessive ground loss at the tunnel heading or shield could be manifested in settlement of the surface above the tunnel. Changes in geologic substructure could occur during construction as a result of settlement while tunneling in unconsolidated sedimentary formations.

Settlement potential during tunneling is partly a function of geologic conditions and ground loss at the tunnel heading and shield. The ground loss volume would be dependent on the tunnel contractor's means and methods, overall workmanship, and subsurface geology encountered. The design intent is to minimize ground surface settlements during tunnel construction to a level that is imperceptible to third parties and agencies (Parsons 2011). Impacts would be significant, but implementation of MM GEO-6a and MM GEO-6b would reduce impacts to less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
Once the tunnel is constructed, there would be minimal risk of instability. Unstable earth conditions or changes in geologic structure would be unlikely. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

A portion of the offshore tunnel between the TraPac and Southwest Marine shaft sites would be in unconsolidated sedimentary formations where excessive ground losses could occur at the tunnel heading or shield. Ground loss could be reflected in settlement of the surface above the tunnel within the Port of Los Angeles.

Beyond the Southwest Marine shaft, the offshore portion of the tunnel would be mostly in Miocene sedimentary formations. In this formation, it is unlikely that settlement of the seafloor as a result of changes in geologic substructure or unstable earth conditions would occur.

Overall, impacts would be significant, but implementation of MM GEO-6a and MM GEO-6b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Once the tunnel is constructed, there would be minimal risk of instability. Unstable earth conditions or changes in geologic structure would be unlikely. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

Shaft construction methods under consideration include water-tight excavation methods such as slurry walls and ground freezing, which are considered suitable for the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites (Parsons 2011). The shaft sites are located in saturated, relatively pervious deposits including fill soils, alluvium, the Lakewood Formation, and the San Pedro Formation (Fugro 2011). Groundwater levels at the shaft sites generally correspond to heads ranging from 70 to 160 feet above the base of the shafts. Groundwater inflows are expected to be a major concern during the excavation of the shafts (Parsons 2011). Key issues for the shaft excavation and support methods include the shaft depth, stability of the soil/rock formation, groundwater levels, and potential for blow out or heave of the bottom of the excavation (Parsons 2011).

Several potential risks associated with the excavation of the shafts have been identified (Parsons 2011). Deep shafts in soil below the groundwater level have the potential for base instability during excavation.

If groundwater seepage paths are not cut off or controlled, or if deep aquifer de-pressurization is not possible, boiling or quicksand conditions could develop during construction. If piping or bottom heave is allowed to develop in a deep shaft, failure of the shaft is a possibility. Leaks in the shaft walls as a result of incomplete ground freezing could result in lowering of the groundwater table that could cause ground settlement. Failures of shafts excavated in saturated soils with slurry walls or frozen ground can result in lost ground (i.e., a cave-in) and structural problems that can affect the entire shaft (i.e., the shaft wall could collapse) (Parsons 2011).

Shaft excavation at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites would be in unconsolidated sediments (soft ground), which could be prone to instability during construction. Ground surface settlements or other ground movement during shaft construction could result in unstable earth conditions, causing changes in the geologic structure in the vicinity of the shaft. Once the shafts are constructed and during tunnel construction, there would be minimal risk of instability. Impacts during shaft construction would be significant, but implementation of MM GEO-6a and MM GEO-6b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at these shaft sites. Once the access structures are constructed, there would be minimal risk of instability. Unstable earth conditions or changes in geologic structure would be unlikely. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

Seafloor grading and dredging associated with riser and diffuser construction could result in some minor and localized unstable earth conditions. However, seafloor cuts in unconsolidated sediment would likely flatten and become naturally stable over time. Unstable earth conditions would not pose a significant hazard during construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis
Operation of the riser and diffuser would not result in localized unstable earth conditions or changes in geologic substructure. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis
The rehabilitation work for the existing ocean outfalls would not involve new seafloor excavations or dredging and would not result in unstable earth conditions or changes in geologic substructure. There would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
Operation of the existing ocean outfalls would not result in unstable earth conditions or changes in geologic substructure. There would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Construction of the onshore and offshore tunnel and at the JWPCP East, TraPac, LAXT, and Southwestern Marine shaft sites for Alternative 1 (Project) could result in unstable earth conditions or changes in geologic substructure. Impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation
MM GEO-6a. During the final design process, perform geotechnical investigations to provide characterization of the subsurface conditions and anticipated ground behavior along the selected tunnel route and at the shaft sites. The objective of these investigations will be to reduce the potential impacts of shaft excavation instability and ground settlement along the tunnel. The investigation will address facilities at risk of damage due to potential tunneling-induced settlements or shaft instability. An appropriate shaft excavation method that minimizes the risk of excavation instability and ground settlement in the vicinity of the shaft will be recommended. Geotechnical criteria for stabilization of shaft excavations will be incorporated into the project design to ensure the safety and stability of excavations. Recommendations for control and monitoring of the tunnel boring machine excavation and proper

installation of the tunnel lining system to avoid excessive ground loss at the tunnel heading and shield will be made. Project design documents will also specify contingency measures that will be implemented if excessive settlement were to occur during construction.

MM GEO-6b. Develop a detailed plan for construction monitoring that will minimize potential ground surface settlements at the shafts and along the onshore tunnel. The objective of the plan will be to reduce the risk of construction instability and to confirm that ground surface settlement is kept to a level that avoids damage to structures above or along the tunnel alignment. The plan will describe the specific monitoring that will be performed before, during, and after construction. Instrumentation (e.g., survey monuments, slope inclinometers, and/or extensometers) may be used to accurately quantify parameters of ground and structure behaviors and to monitor the rate of change. Contingent construction approaches will be implemented if excessive settlement occurs. The plan will address municipality, agency, and third party settlement tolerance requirements as appropriate for the shaft sites and tunnel alignment. Geotechnical inspections will be performed during construction to confirm the encountered subsurface conditions and to provide recommendations for alternate settlement control approaches, if warranted. If the construction monitoring program detects the occurrence of excessive settlement and alternative settlement control measures are inadequate to meet settlement specifications, then further excavation will cease until additional ground support measures are implemented to alleviate the settlement as directed by the project engineer.

Residual Impacts

MM GEO-6a and MM GEO-6b would reduce the impacts of unstable earth conditions during construction of the onshore and offshore tunnel and the JWPCP East, TraPac, LAXT, and Southwest Marine shafts. Residual impacts would be less than significant.

NEPA Impact Determination

Construction of the onshore and offshore tunnel and at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) could result in unstable earth conditions or changes in geologic substructure. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-6a and MM GEO-6b.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-7. Would Alternative 1 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

As shown in Table 8-8, the shaft sites would be located primarily in areas of artificial fill soils at the ground surface where natural topsoils likely have been previously disturbed and/or covered by fill. The existing fill soils in these areas likely have low to negligible expansion potential inasmuch as typical

engineering practice is to use granular, non-expansive soil as imported fill material. Surface improvements at the shaft sites would be designed based on the site soil conditions. The expansion potential would be evaluated and expansive soils, if present, would be remediated, as necessary, through implementation of MM GEO-7 to less than significant.

The shafts would be excavated through existing surficial fill soil into the underlying Lakewood Formation deposits. The predominantly granular silty and sandy soils below the fill are likely to have little to no expansion potential. The anticipated shaft excavation and the shaft itself would be mostly below the water table where soils would not be susceptible to shrink-swell soil behavior. The expansion potential of subsurface soils would be evaluated and expansive soils, if present, would be remediated for the shaft and access structure design through implementation of MM GEO-7 to reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at each shaft site. Shrink-swell soils, if encountered, would be remediated during construction with implementation of MM GEO-7. Measures to remediate expansive soils would protect facilities during operation. Therefore, impacts during operation would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

Expansive soils are typically related to montmorillinite clay, soils containing anhydrous sodium sulfate, and some shales. The unconsolidated marine sediment at the riser and diffuser area is primarily saturated silt and fine sand. The riser would be driven into sedimentary formations such as the Malaga Mudstone, Altimira Shale, and Monterey Formation mudstone and claystone material that have some potential to swell and undergo volumetric change (Fugro 2011). However, there would be no opportunity for swelling to occur because the construction would occur in the ocean environment where there would be no additional water absorption, and the material would not be exposed to alternating drying and wetting cycles. There would be no impacts during construction due to shrink-swell and swelling clay soil behavior.

NEPA Analysis

Environmental impacts would be the same as those described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
As previously described, because the riser and diffuser would be in the ocean environment, there would be no additional water absorption, and the material would not be exposed to alternate drying and wetting cycles during operation. There would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis
There would be no excavation during construction on the existing ocean outfalls, and they would not be subjected to shrink-swell soil behavior. There would be no impacts during construction.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
The existing ocean outfalls would not be subjected to shrink-swell soil behavior. There would be no impacts during operation.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) could be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures. Impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-7.

Residual Impacts
Impacts associated with expansive soils at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites would be remediated with implementation of MM GEO-7 during construction. Residual impacts would be less than significant.

NEPA Impact Determination
Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) could be located in soil characterized by shrink-swell potential that might result in deformation

of foundations or damage to structures. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-7.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-8. Would Alternative 1 (Project) destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features? Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands?

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis
The riser and diffuser would cover a seabed area of approximately 5 to 10 acres. The riser would be located in a water depth of approximately 200 feet. Construction of the riser and diffuser would be across a relatively flat seabed surface with nearly flat slopes up to about 2 degrees. The structures would be located at least 1 mile or more from the SP Shelf edge. The shelf edge is locally cut by submarine canyons, which would be avoided by at least 1 mile or more. Naturally occurring bottom features noted in areas of the SP Shelf include rock outcrops, gas vent craters, and mud volcanoes (Fugro 2011). The seabed at the riser and diffuser area, however, is covered by Holocene marine sediment, which is mostly featureless and smooth. In this setting, the riser and diffuser would be obvious human made bottom features over a relatively small area, but they would not be adversely modifying an unusual geologic or topographic feature because the SP Shelf would remain undisturbed over a broad region. Therefore, impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis
Rehabilitation of the existing ocean outfalls, which may include re-ballasting and joint repair, would be within the existing footprint. Therefore, there would be no impacts during construction.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

8.4.3.3 Impact Summary – Alternative 1

Impacts on geology, soils, and mineral resources analyzed in this EIR/EIS for Alternative 1 are summarized in Table 8-13 and Table 8-14. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 8-13. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact GEO-1. Would Alternative 1 (Program) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?			
POWRP			
Process Optimization	CEQA Significant Impact During Construction	MM GEO-1. Perform geotechnical investigations and provide site-specific recommendations for stabilization of temporary and permanent slopes and excavations to reduce risks to structures and construction workers associated with landslides, mudslides, or ground failure. The geotechnical investigation will address the requirements of local grading ordinances, as appropriate. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation

Table 8-13 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact GEO-2. Would Alternative 1 (Program) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
SJCWRP			
Plant Expansion	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
POWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LCWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LBWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
JWPCP			
Solids Processing	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Biosolids Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 8-13 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact GEO-3. Would Alternative 1 (Program) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	MM GEO-3. Perform geotechnical investigations and provide site-specific recommendations for reducing the adverse effects of seismic ground shaking on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California, and will be in compliance with current building codes, as applicable, to reduce the risk of seismic shaking. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation

Table 8-13 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
Biosolids Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact GEO-4. Would Alternative 1 (Program) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
Process Optimization	CEQA Less than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	MM GEO-4. Perform geotechnical investigations and provide site-specific recommendations to reduce the impacts of liquefaction on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation

Table 8-13 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact GEO-5. Would Alternative 1 (Program) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Impact GEO-7. Would Alternative 1 (Program) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
SJCWRP			
Plant Expansion	CEQA Significant Impact During Operation	MM GEO-7. Perform geotechnical investigations and provide site-specific recommendations to reduce the risk of adverse effects on structures due to shrink-swell soil behavior. The investigations will include an analysis of soil expansion potential (i.e., American Society for Testing and Materials D-4829). Remediation may include expansive soil removal, reinforced foundations, and/or special pavement design. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
Process Optimization	CEQA Significant Impact During Operation	MM GEO-7	CEQA Less Than Significant Impact During Operation

Table 8-13 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
POWRP			
Process Optimization	CEQA Significant Impact During Operation	MM GEO-7	CEQA Less Than Significant Impact During Operation
LCWRP			
Process Optimization	CEQA Significant Impact During Operation	MM GEO-7	CEQA Less Than Significant Impact During Operation
LBWRP			
Process Optimization	CEQA Significant Impact During Operation	MM GEO-7	CEQA Less Than Significant Impact During Operation
JWPCP			
Solids Processing	CEQA Significant Impact During Operation	MM GEO-7	CEQA Less Than Significant Impact During Operation

Table 8-14. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact GEO-1. Would Alternative 1 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM GEO-1. Perform geotechnical investigations and provide site-specific recommendations for stabilization of temporary and permanent slopes and excavations to reduce risks to structures and construction workers associated with landslides, mudslides, or ground failure. The geotechnical investigation will address the requirements of local grading ordinances, as appropriate. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Significant Impact During Construction	N/A	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Significant Impact During Construction	N/A	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact GEO-2. Would Alternative 1 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-2. Perform site-specific fault hazard investigations to minimize fault rupture damage and facilitate repair of structures damaged as a result of fault movement. The investigation will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. Geologic evaluations of fault crossings will include information to define fault location, fault slip, angle of intersection at the crossing, type of fault slip, width of disturbance, fault dip angle, and design fault displacement. Remediation measures may include engineered backfill, special lining systems, and/or special access provisions for repair. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-2	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact GEO-3. Would Alternative 1 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3. Perform geotechnical investigations and provide site-specific recommendations for reducing the adverse effects of seismic ground shaking on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California, and will be in compliance with current building codes, as applicable, to reduce the risk of seismic shaking. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact GEO-4. Would Alternative 1 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4. Perform geotechnical investigations and provide site-specific recommendations to reduce the impacts of liquefaction on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact GEO-5. Would Alternative 1 (Project) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact GEO-6. Would Alternative 1 (Project) result in unstable earth conditions or changes in geologic substructure?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Significant Impact During Construction	N/A	MM GEO-6a. During the final design process, perform geotechnical investigations to provide characterization of the subsurface conditions and anticipated ground behavior along the selected tunnel route and at the shaft sites. The objective of these investigations will be to reduce the potential impacts of shaft excavation instability and ground settlement along the tunnel. The investigation will address facilities at risk of damage due to potential tunneling-induced settlements or shaft instability. An appropriate shaft excavation method that minimizes the risk of excavation instability and ground settlement in the vicinity of the shaft will be recommended. Geotechnical criteria for stabilization of shaft excavations will be incorporated into the project design to ensure the safety and stability of excavations. Recommendations for control and monitoring of the tunnel boring machine excavation and proper installation of the tunnel lining system to avoid excessive ground loss at the tunnel heading and shield will be made. Project design documents will also specify contingency measures that will be implemented if excessive settlement were to occur during construction. MM GEO-6b. Develop a detailed plan for construction monitoring that will minimize potential ground surface settlements at the shafts and along the onshore tunnel. The objective of the plan will be to reduce the risk of construction instability and to confirm that ground surface settlement is kept to a level that avoids damage to structures above or along the tunnel alignment. The plan will describe the specific monitoring that will be performed before, during, and after construction. Instrumentation (e.g., survey monuments, slope inclinometers, and/or extensometers) may be used to accurately quantify parameters of ground and structure behaviors and to monitor the rate of change. Contingent construction approaches will be implemented if excessive settlement occurs. The plan will address municipality, agency, and third party settlement tolerance requirements as appropriate for the shaft sites and tunnel alignment. Geotechnical inspections will be performed during	CEQA Less Than Significant Impact During Construction

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			construction to confirm the encountered subsurface conditions and to provide recommendations for alternate settlement control approaches, if warranted. If the construction monitoring program detects the occurrence of excessive settlement, and alternative settlement control measures are inadequate to meet settlement specifications, then further excavation will cease until additional ground support measures are implemented to alleviate the settlement as directed by the project engineer.	
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
TraPac	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact GEO-7. Would Alternative 1 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM GEO-7. Perform geotechnical investigations and provide site-specific recommendations to reduce the risk of adverse effects on structures due to shrink-swell soil behavior. The investigations will include an analysis of soil expansion potential (i.e., American Society for Testing and Materials D-4829). Remediation may include expansive soil removal, reinforced foundations, and/or special pavement design. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Significant Impact During Construction	N/A	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Significant Impact During Construction	N/A	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 8-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact GEO-8. Would Alternative 1 (Project) destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features? Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands?				
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

8.4.4 Alternative 2

8.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

8.4.4.2 Project

The impacts for the onshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact GEO-1. Would Alternative 2 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

<u>Construction</u>

CEQA Analysis

The Wilmington to PV Shelf offshore tunnel profile would be at depths between about 100 and 250 feet bgs or below the seafloor. Landslides or indications of deep-seated submarine mass movements have not been mapped along the offshore tunnel alignment (Fugro 2011). The tunnel would not cross below or near known ancient landslides or areas of past submarine mass movements. Deep-seated ground failure is considered a low geologic hazard during tunnel construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

During operation, the offshore tunnel would not be affected by landslides or deep-seated submarine mass movements because areas of major seafloor instability have not been identified along the tunnel alignment. Deep-seated ground failure is considered a low geologic hazard during operation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

The riser and diffuser area would not be located in areas of past seafloor instability (Fugro 2011). Design geotechnical investigations would be performed to determine the adequate setback from the edge of the PV Shelf. Therefore, ground failure would be a low geologic hazard during construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Ground failure is considered a low geologic hazard during operation because the riser and diffuser would not be located in areas of past submarine mass movements or seafloor instability (Fugro 2011). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) could expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure. Impacts under CEQA would be significant before mitigation. Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-1.

Residual Impacts
MM GEO-1 would reduce impacts during construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites to less than significant.

NEPA Impact Determination
Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) could expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-1.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-2. Would Alternative 2 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving rupture of a known earthquake fault?

Although many active faults are mapped near project facilities (see Table 8-7, Table 8-8, and Table 8-9), the potential for fault surface rupture would only exist for project features that are underlain by or extend across an active fault. Fault rupture, if it were to occur, could result in fault movement and associated deformation of the ground near the fault. None of the proposed shafts are underlain by active faults. The tunnel would cross active faults, as described herein.

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
The offshore tunnel would cross the active Palos Verdes Fault between the LAXT and Southwest Marine shaft sites (Parsons 2011). The offshore tunnel also crosses the Cabrillo Fault near Point Fermin. The Cabrillo Fault may also be active, but it would likely move only in response to large earthquakes involving the Palos Verdes Fault (Fugro 2011).

Due to the infrequent occurrence of fault rupture and the relatively short duration of construction, the probability that a fault rupture would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from surface fault rupture during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the offshore tunnel could be affected by fault rupture in the event of a large earthquake along the Palos Verdes Fault. A tunnel liner system would be installed along the portion of the tunnel that crosses the Palos Verdes Fault to minimize the potential for damage due to fault rupture. In the event of fault rupture, there could be some damage to the tunnel and operation could be affected during system repair. This would be a significant impact. Implementation of MM GEO-2 would reduce the risk of tunnel damage and facilitate repair following an earthquake to a less than significant level.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

The risers and diffuser area would not be located near or within an active fault zone (Saucedo et al. 2003). Therefore, there would be no risk of fault rupture on site during construction, and there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

As discussed under construction, there would be no risk of fault rupture on site during operation, and there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Operation of the offshore tunnel for Alternative 2 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving rupture of a known earthquake fault. Impacts under CEQA would be significant before mitigation. Construction of Alternative 2 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-2.

Residual Impacts
Implementation of MM GEO-2 would reduce the risk of offshore tunnel damage and would facilitate repairs. Residual impacts would be less than significant.

NEPA Impact Determination
Operation of the offshore tunnel for Alternative 2 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving rupture of a known earthquake fault. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 2 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-2.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-3. Would Alternative 2 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?

The tunnel, shafts, riser and diffuser, and existing ocean outfalls would potentially be exposed to seismic ground shaking in response to earthquakes on local and regional faults, as shown in Table 8-7, Table 8-8, and Table 8-9. Strong seismic ground shaking could be damaging during construction and operation of the facilities.

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
The offshore tunnel alignment for Alternative 2 (Project) is in a seismically active area. Strong seismic ground shaking could occur during construction of the tunnel. Seismic ground shaking during construction could damage the tunnel lining and equipment supporting tunnel construction. There is also a risk that earthquake shaking could result in disruption of power, so there would be emergency generators on site to support operation of critical systems such as tunnel ventilation (see Chapter 16 for a discussion of emergency management plans and response). However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

The hazard of seismic shaking would exist over the design life of the tunnel. The relative likelihood of strong seismic shaking during operation would be greater than during construction due to the increased time frame of seismic exposure during the design life of Alternative 2 (Project). Buried structure connections can be vulnerable to seismic shaking. Proper seismic design would allow buried structures to withstand seismic shaking without significant damage. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

Construction of the riser would require a jack-up platform and supporting facilities, such as a crane during installation of the riser casing. Strong seismic ground shaking could affect the platform or supporting facilities on the platform. The riser itself would be driven or hydro-jetted into consolidated materials below the seafloor. Temporary excavation works, such as sheet piling, could be damaged by seismic ground shaking.

The diffuser would be constructed from an anchored derrick barge, which would not be affected by seismic shaking. Some seafloor grading or dredging may be used to construct the diffuser. The dredge materials would be sidecast, if feasible. Significant impacts could result from failure of excavation support, disruption of power, and/or damage to offshore platforms. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Once the riser is constructed, there would be minimal risk of earthquake damage to the riser itself because construction support facilities would be removed, and the permanent riser casing would be in place below the seabed. Strong seismic ground shaking could result in damage at the riser/diffuser connection at the seabed or at the riser/tunnel connection at depth.

The diffuser would be placed on a roadbed base of ballast rock. The roadbed ballast rock could experience settlement during seismic ground shaking. Differential settlement of the ballast rock could result in some deformation of the diffuser pipeline. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Operation of the onshore and offshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the riser and diffuser on the PV Shelf for Alternative 2 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking. Impacts under CEQA would be significant before mitigation. Construction of Alternative 2 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-3.

Residual Impacts

Risks associated with ground shaking during operation of the onshore and offshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the riser and diffuser on the PV Shelf would be reduced with implementation of MM GEO-3. Residual impacts would be less than significant.

NEPA Impact Determination

Operation of the onshore and offshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the riser and diffuser on the PV Shelf for Alternative 2 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 2 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-3.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-4. Would Alternative 2 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?

Alternative 2 (Project) elements would be located in a seismically active area and could be exposed to strong, potentially damaging levels of seismic shaking. Based on the geologic setting, the potential for liquefaction exists at the project facilities as summarized in Table 8-7, Table 8-8, and Table 8-9. Liquefaction could result in settlements or lateral spreading. The tunnels, however, would be in sedimentary formations such as the Pleistocene-Age Lakewood Formation or the Miocene-Age Monterey

Formation at depths below potentially liquefiable materials (Parsons 2011). The shaft sites located in alluvial and/or filled ground with shallow water table conditions are in geologic settings subject to liquefaction (Fugro 2011; CDMG 1998f). The riser and diffuser area is also underlain by potentially liquefiable sediments (Fugro 2011).

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

The offshore tunnel would be in Pleistocene and Miocene sedimentary formations, which are not potentially liquefiable. Therefore, liquefaction would not present a significant geologic hazard during construction, and impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

The offshore tunnel would be in Pleistocene and Miocene sedimentary formations, which are not potentially liquefiable. Therefore, liquefaction would not present a significant geologic hazard during operation, and impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

The riser and diffuser area would be located at the edge of the PV Shelf. To prepare for riser installation, unconsolidated seafloor material would be removed. The jack-up platform legs may be underlain by some thickness of potentially liquefiable material, which could settle if liquefaction were to occur. Typically, the platform could level itself if tilting occurred as a result of liquefaction. However, there could be some disruption of supporting facilities on the platform. The riser would be driven or hydro-jetted into consolidated materials below the seafloor, which would not be liquefiable. Temporary excavation works, such a sheet piling, could be damaged by liquefaction.

The diffuser may be underlain by a varying thickness of potentially liquefiable Holocene sediment. The diffuser could be impacted by lateral spreading if strong seismic shaking were to occur (Fugro 2011).

The offshore areas where the diffuser would be located are underlain by potentially liquefiable marine sediment (Fugro 2011). Liquefaction can result in lateral spreading on gentle slopes. Lateral spreading hazards exist at the diffuser area (Fugro 2005a, 2005b). However, due to the infrequent occurrence of

seismic events causing liquefaction and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from liquefaction during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

The diffuser may be underlain by a varying thickness of potentially liquefiable Holocene sediment (Fugro 2011). The diffuser could be affected by lateral spreading if strong seismic shaking were to occur (Fugro 2011). This would be considered a significant impact prior to mitigation. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Operation of the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites and the riser and diffuser on the PV Shelf for Alternative 2 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking. Impacts under CEQA would be significant before mitigation. Construction of Alternative 2 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-4.

Residual Impacts

MM GEO-4 would reduce the risk of liquefaction during operation at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites and the riser and diffuser area on the PV Shelf. Residual impacts would be less than significant.

NEPA Impact Determination

Operation of the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites and the riser and diffuser on the PV Shelf for Alternative 2 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 2 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-4.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-6. Would Alternative 2 (Project) result in unstable earth conditions or changes in geologic substructure?

Excavations for project facilities such as tunnels or shafts can potentially cause unstable earth conditions and changes in geologic substructure that can result in collapse or settlement of overlying or adjacent geologic materials (i.e., unconsolidated sediments) and consequent damage to any structures that are constructed upon these materials. The potential for subsidence to develop over a tunnel excavation and its influence on buildings in the settlement zone is an important consideration for any tunnel project.

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

A portion of the tunnel between the TraPac and Southwest Marine shaft sites would be in unconsolidated sedimentary formations where excessive ground losses could occur at the tunnel heading or shield. Ground loss could be reflected in settlement of the land surface above the tunnel within the Port of Los Angeles. Perceptible ground settlement would reflect a change in geologic substructure and would be a significant impact.

Settlement potential during tunneling is partly a function of geologic conditions and ground loss at the tunnel heading and shield. The ground loss volume would be dependent on the tunnel contractor's means and methods, overall workmanship, and subsurface geology encountered. The design intent would be to minimize ground surface settlements during tunnel construction to a level that is imperceptible to third parties and agencies. (Parsons 2011.)

Beyond the Southwest Marine shaft, the offshore portion of the tunnel would be mostly in Miocene sedimentary formations. In this formation, it is unlikely that settlement of the seafloor as a result of changes in geologic substructure or unstable earth conditions would occur.

Overall, impacts would be significant, but implementation of MM GEO-6a and MM GEO-6b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Once the tunnel is constructed, there would be minimal risk of instability. Unstable earth conditions or changes in geologic structure would be unlikely. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
Seafloor grading and dredging associated with riser and diffuser construction could result in some minor and localized unstable earth conditions. However, seafloor cuts in unconsolidated sediment would likely flatten and become naturally stable over time. Unstable earth conditions would not pose a significant hazard during construction. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis
Operation of the riser and diffuser would not result in localized unstable earth conditions or changes in geologic substructure. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction of the onshore and offshore tunnel and at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) could result in unstable earth conditions or changes in geologic substructure. Impacts under CEQA would be significant before mitigation. Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-6a and MM GEO-6b.

Residual Impacts
MM GEO-6a and MM GEO-6b would reduce the impacts of unstable earth conditions during construction of the onshore and offshore tunnel and the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites to less than significant.

NEPA Impact Determination
Construction of the onshore and offshore tunnel and at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) could result in unstable earth conditions or changes in geologic substructure. Impacts under NEPA would be significant before mitigation with respect to the

No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-6a and MM GEO-6b.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-7. Would Alternative 2 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
Expansive soils are typically related to montmorillinite clay, soils containing anhydrous sodium sulfate, and some shales. The unconsolidated marine sediment at the riser and diffuser area is primarily saturated silt and fine sand. The riser would be driven into sedimentary formations such as the Malaga Mudstone, Altimira Shale, and Monterey Formation mudstone and claystone material that have some potential to swell and undergo volumetric change (Fugro 2011). However, there would be no opportunity for swelling to occur because the construction would occur in the ocean environment where there would be no additional water absorption, and the material would not be exposed to alternating drying and wetting cycles. There would be no impacts during construction due to shrink-swell and swelling clay soil behavior.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis
As described under construction, because the riser and diffuser would be in the ocean environment, there would be no additional water absorption, and the material would not be exposed to alternate drying and wetting cycles during operation. There would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) could be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures. Impacts under CEQA would be significant before mitigation. Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-7.

Residual Impacts
Impacts associated with expansive soils at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites would be remediated with implementation of MM GEO-7 during construction. Residual impacts would be less than significant.

NEPA Impact Determination
Construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) could be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-7.

Residual Impacts
Impacts would be less than significant, as discussed under the CEQA impact determination.

Impact GEO-8. Would Alternative 2 (Project) destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features? Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
The riser and diffuser would cover a seabed area of approximately 5 to 10 acres. The riser would be located in a water depth of approximately 175 feet. There are no distinct or prominent geologic or topographic features at the seabed that would be affected. Construction of the riser and diffuser would be across a relatively flat seabed surface with nearly flat slopes up to about 2 degrees. The structures would be setback from the PV Shelf edge. The seabed at the riser and diffuser area is covered by Holocene marine sediment, which is mostly featureless and smooth. In this setting, the riser and diffuser would be obvious human made bottom features over a relatively small area, but they would not be adversely modifying an unusual geologic or topographic feature because the PV Shelf would remain undisturbed over a broad region. Therefore, impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination
Construction of Alternative 2 (Project) would not destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features. Such features may include,

but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 2 (Project) would not destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands before mitigation. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

8.4.4.3 Impact Summary – Alternative 2

Impacts on geology, soils, and mineral resources for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 8-13. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 8-15. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 8-15. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact GEO-1. Would Alternative 2 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM GEO-1. Perform geotechnical investigations and provide site-specific recommendations for stabilization of temporary and permanent slopes and excavations to reduce risks to structures and construction workers associated with landslides, mudslides, or ground failure. The geotechnical investigation will address the requirements of local grading ordinances, as appropriate. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Significant Impact During Construction	N/A	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
LAXT	CEQA Significant Impact During Construction	N/A	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact GEO-2. Would Alternative 2 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-2. Perform site-specific fault hazard investigations to minimize fault rupture damage and facilitate repair of structures damaged as a result of fault movement. The investigations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. Geologic evaluations of fault crossings will include information to define fault location, fault slip, angle of intersection at the crossing, type of fault slip, width of disturbance, fault dip angle, and design fault displacement. Remediation measures may include engineered backfill, special lining systems, and/or special access provisions for repair. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-2	NEPA Less Than Significant Impact During Operation

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact GEO-3. Would Alternative 2 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3. Perform geotechnical investigations and provide site-specific recommendations for reducing the adverse effects of seismic ground shaking on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California, and will be in compliance with current building codes, as applicable, to reduce the risk of seismic shaking. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact GEO-4. Would Alternative 2 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4. Perform geotechnical investigations and provide site-specific recommendations to reduce the impacts of liquefaction on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact GEO-5. Would Alternative 2 (Project) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact GEO-6. Would Alternative 2 (Project) result in unstable earth conditions or changes in geologic substructure?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Significant Impact During Construction	N/A	MM GEO-6a. During the final design process, perform geotechnical investigations to provide characterization of the subsurface conditions and anticipated ground behavior along the selected tunnel route and at the shaft sites. The objective of these investigations will be to reduce the potential impacts of shaft excavation instability and ground settlement along the tunnel. The investigation will address facilities at risk of damage due to potential tunneling-induced settlements or shaft instability. An appropriate shaft excavation method that minimizes the risk of excavation instability and ground settlement in the vicinity of the shaft will be recommended. Geotechnical criteria for stabilization of shaft excavations will be incorporated into the project design to ensure the safety and stability of excavations. Recommendations for control and monitoring of the tunnel boring machine excavation and proper installation of the tunnel lining system to avoid excessive ground loss at the tunnel heading and shield will be made. Project design documents will also specify contingency measures that will be implemented if excessive settlement were to occur during construction. MM GEO-6b. Develop a detailed plan for construction monitoring that will minimize potential ground surface settlements at the shafts and along the onshore tunnel. The objective of the plan will be to reduce the risk of construction instability and to confirm that ground surface settlement is kept to a level that avoids damage to structures above or along the tunnel alignment. The plan will describe the specific monitoring that will be performed before, during, and after construction. Instrumentation (e.g., survey monuments, slope inclinometers, and/or extensometers) may be used to accurately quantify parameters of ground and structure behaviors and to monitor the rate of change. Contingent construction approaches will be implemented if excessive settlement occurs. The plan will address municipality, agency, and third party settlement tolerance requirements as appropriate for the shaft sites and tunnel alignment. Geotechnical inspections will be performed during	CEQA Less Than Significant Impact During Construction

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			construction to confirm the encountered subsurface conditions and to provide recommendations for alternate settlement control approaches, if warranted. If the construction monitoring program detects the occurrence of excessive settlement and alternative settlement control measures are inadequate to meet settlement specifications, then further excavation will cease until additional ground support measures are implemented to alleviate the settlement as directed by the project engineer.	
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
TraPac	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact GEO-7. Would Alternative 2 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM GEO-7. Perform geotechnical investigations and provide site-specific recommendations to reduce the risk of adverse effects on structures due to shrink-swell soil behavior. The investigations will include an analysis of soil expansion potential (i.e., American Society for Testing and Materials D-4829). Remediation may include expansive soil removal, reinforced foundations, and/or special pavement design. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Significant Impact During Construction	N/A	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Significant Impact During Construction	N/A	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 8-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact GEO-8. Would Alternative 2 (Project) destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features? Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands?				
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

8.4.5 Alternative 3

8.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

8.4.5.2 Project

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as for Alternative 2 (Project). The impacts for the existing ocean outfalls for Alternative 3 (Project) would be the same as for Alternative 1 (Project).

Impact GEO-1. Would Alternative 3 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

The Figueroa/Gaffey to Palos Verdes Shelf onshore tunnel profile would be at depths between about 70 and 370 feet bgs. The tunnel profile would not pass near or below known landslides (Dibblee 1999) and

would not result in renewed landslide movement during construction. Deep-seated ground failure is considered a low geologic hazard during construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Operation of the tunnel would not result in landslides or ground failure, as the tunnel would be deeper than known landslides along or near the alignment. Deep-seated ground failure is considered a low geologic hazard during operation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

The Figueroa/Gaffey to Palos Verdes Shelf offshore tunnel profile would be at depths between about 100 and 250 feet bgs or below the seafloor. During construction, the offshore tunnel would not be affected by landslides or deep-seated submarine mass movements because areas of major seafloor instability have not been identified along the tunnel alignment (Fugro 2011). Deep-seated ground failure is considered a low geologic hazard during construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

During operation, the offshore tunnel would not be affected by landslides or deep-seated submarine mass movements because areas of major seafloor instability have not been identified along the tunnel alignment. Deep-seated ground failure is considered a low hazard during operation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – JWPCP West

Construction

CEQA Analysis

The JWPCP West shaft site is not in a known landslide area (CDMG 1998e; Dibblee 1999). However, construction of the JWPCP West shaft would be in unconsolidated sedimentary formations below the water table. Excavation instability and/or shaft failure is a construction risk that could result in ground failure in the vicinity of the shaft. This would represent a significant impact. Once the shaft is constructed, however, there would be minimal risk of instability during tunnel construction. Implementation of MM GEO-1 would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at the JWPCP West shaft site. The shaft site is not in a known landslide area (CDMG 1998e; Dibblee 1999); therefore, the hazard of ground failure during operation would be low. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

The Angels Gate shaft site is not in a known landslide area (CDMG 1998e; Dibblee 1999). Construction of the Angels Gate shaft would be in alluvial deposits at the surface underlain by members of the Monterey Formations. Because the Monterey Formation is not unconsolidated sedimentary material, excavation instability and/or shaft failure is a low construction risk. Impacts would be less than significant. Once the shaft is constructed, there would be minimal risk of instability during tunnel construction.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
An access structure from the ground surface to the tunnel would be constructed at the Angels Gate shaft site. The Angels Gate shaft site is not in a known landslide area (CDMG 1998e; Dibblee 1999); therefore, the hazard of ground failure during operation would be low. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction at the JWPCP West shaft site for Alternative 3 (Project) could expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure. Impacts under CEQA would be significant before mitigation. Operation of Alternative 3 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-1.

Residual Impacts
MM GEO-1 would reduce impacts during construction at the JWPCP West shaft site to less than significant.

NEPA Impact Determination
Construction at the JWPCP West shaft site for Alternative 3 (Project) could expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 3 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-1.

Residual Impacts
Impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-2. Would Alternative 3 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving rupture of a known earthquake fault?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis
The onshore tunnel would cross the active Palos Verdes Fault just southwest of the intersection of Figueroa and John S. Gibson Boulevard (Fugro 2011). The onshore tunnel also crosses the Cabrillo Fault

north of Angels Gate Park. The Cabrillo Fault may also be active, but it would likely move only in response to large earthquakes involving the Palos Verdes Fault (Fugro 2011).

Due to the infrequent occurrence of fault rupture on the Palos Verdes and Cabrillo Faults and the relatively short duration of construction, the probability that a fault rupture would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from surface fault rupture during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Operation of the onshore tunnel could be affected by fault rupture in the event of a large earthquake along the Palos Verdes Fault. A tunnel liner system would be installed along the portion of the tunnel that crosses the Palos Verdes Fault to minimize the potential for damage due to fault rupture. In the event of fault rupture, there could be some damage to the tunnel, and operation could be affected during system repair. This would be a significant impact before mitigation. Implementation of MM GEO-2 would reduce impacts if the Palos Verdes Fault were to rupture during operation to a less than significant level.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

The offshore tunnel does not cross an active fault; no faults are mapped crossing the alignment (Saucedo et al. 1993). There would be no risk of fault rupture within the alignment during construction, and there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

The offshore tunnel would not cross a mapped active fault. There would be no risk of fault rupture within the alignment during operation, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis
The JWPCP West and Angels Gate shaft sites are not near or within an active fault zone (Hart and Bryant 1997). Therefore, there would be no risk of fault rupture on site during construction, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
An access structure from the ground surface to the tunnel would be constructed at each shaft site. The JWPCP West and Angels Gate shaft sites are not near or within a mapped active fault zone. Therefore, there would be no risk of fault rupture on site during operation, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Operation of the onshore tunnel for Alternative 3 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss involving rupture of a known earthquake fault. Impacts under CEQA would be significant before mitigation. Construction of Alternative 3 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-2.

Residual Impacts
Implementation of MM GEO-2 would reduce the risk of onshore tunnel damage and would facilitate repairs. Residual impacts would be less than significant.

NEPA Impact Determination
Operation of the onshore tunnel for Alternative 3 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 3 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-2.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-3. Would Alternative 3 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?

The tunnel, shafts, riser and diffuser, and existing ocean outfalls would potentially be exposed to seismic ground shaking in response to earthquakes on local and regional faults, as shown in Table 8-7, Table 8-8, and Table 8-9. Strong seismic shaking could be damaging during construction and operation of the facilities.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore and Offshore)

Construction

CEQA Analysis

The onshore and offshore tunnel alignments for Alternative 3 (Project) are in a seismically active area. Strong seismic ground shaking could occur during construction of the tunnel. Seismic ground shaking during construction could damage the tunnel lining and equipment supporting tunnel construction. There is also a risk that earthquake shaking could result in disruption of power, so there would be emergency generators on site to support operation of critical systems such as tunnel ventilation (see Chapter 16 for a discussion of emergency management plans and response). However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts for the onshore tunnel would be considered indirect impacts and the environmental impacts for the offshore tunnel would be considered direct impacts.

Operation

CEQA Analysis

The hazard of seismic shaking would exist over the design life of the onshore and offshore tunnel. The relative likelihood of strong seismic shaking during operation would be greater due to the increased time frame of seismic exposure during the design life of Alternative 3 (Project). Buried structure connections can be vulnerable to seismic shaking. Proper seismic design would allow buried structures to withstand seismic shaking without significant damage. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

Strong seismic shaking during the time frame of construction could result in damage to the JWPCP West and Angels Gate shaft excavation temporary support systems. Seismic shaking could also damage onsite support facilities such as the TBM cooling water tower, generators and substations, ventilation systems, cranes, and possibly other facilities. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, the hazard of strong seismic shaking is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Once the permanent access structure is constructed below the ground surface, there would be some potential for damage as a result of seismic shaking. The hazard of seismic shaking would exist over the design life of the buried access structure. The relative likelihood of strong seismic shaking during operation would be greater than that during construction due to the increased time frame of seismic exposure during the design life of Alternative 3 (Project). Buried structure connections can be vulnerable to seismic shaking. Proper seismic design would allow buried structures to withstand seismic ground shaking without significant damage. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Operation of the onshore and offshore tunnel, the JWPCP West and Angels Gate shaft sites, and the riser and diffuser on the PV Shelf for Alternative 3 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking. Impacts under CEQA would be significant before mitigation. Construction of Alternative 3 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-3.

Residual Impacts
Risks associated with ground shaking during operation of the onshore and offshore tunnel, the JWPCP West and Angels Gate shaft sites, and the riser and diffuser on the PV Shelf would be reduced with implementation of MM GEO-3. Residual impacts would be less than significant.

NEPA Impact Determination
Operation of the onshore and offshore tunnel and the riser, the JWPCP West and Angels Gate shaft sites, and diffuser on the PV Shelf for Alternative 3 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, involving strong seismic ground shaking. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 3 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-3.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-4. Would Alternative 3 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?

Alternative 3 (Project) elements would be located in a seismically active area and could be exposed to strong, potentially damaging levels of seismic shaking. Based on the geologic setting, the potential for liquefaction exists at the project facilities as summarized in Table 8-7, Table 8-8, and Table 8-9.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis
A limited reach of the tunnel near the JWPCP West shaft site may be in potentially liquefiable Holocene materials due to its relatively shallow depth. The remaining portion of the tunnel would be in Pleistocene and Miocene sedimentary formations, which are not potentially liquefiable. Liquefaction could potentially have adverse effects on people or structures during construction at the north end of the tunnel near the JWPCP. However, due to the infrequent occurrence of seismic ground shaking and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
Although during operation of the tunnel the risk of liquefaction hazard would be low, seismic shaking could result in liquefaction along the limited reach of tunnel near the JWPCP that may be in potentially liquefiable Holocene materials. This would be a significant impact before mitigation. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
The offshore tunnel would be in Miocene sedimentary formations, which are not potentially liquefiable. Therefore, liquefaction would not present a significant geologic hazard during construction. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis
The offshore tunnel would be in Miocene sedimentary formations, which are not potentially liquefiable. Therefore, liquefaction would not present a significant geologic hazard during operation. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – JWPCP West

Construction

CEQA Analysis
The JWPCP West shaft site is underlain by saturated Holocene alluvium, which may have some susceptibility to liquefaction during strong seismic shaking. The shaft site is relatively flat, and the

potential for lateral spreading is low. If liquefaction-induced settlement occurred during construction, it could potentially damage the shaft and support facilities. However, due to the infrequent occurrence of liquefaction events and the relatively short duration of construction, the probability that a liquefaction event would coincide with construction activity is low. Therefore, the hazard of liquefaction is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from liquefaction during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at the JWPCP West shaft site. During operation, seismic shaking could result in liquefaction. Liquefaction-induced settlements could damage the access structure and the tunnel/access structure connection. This would be a significant impact before mitigation. Implementation of MM GEO-4 would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

The Angels Gate shaft site would be in members of the Monterey Formation, which are not subject to liquefaction. Therefore, liquefaction would not present a significant geologic hazard during construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at the Angels Gate shaft site. The Angels Gate access structure would be in members of the Monterey Formation, which are not subject to liquefaction. Therefore, liquefaction would not present a significant geologic hazard during operation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Operation of the onshore tunnel, the JWPCP West shaft site, and the riser and diffuser on the PV Shelf for Alternative 3 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking. Impacts under CEQA would be significant before mitigation. Construction of Alternative 3 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-4.

Residual Impacts

MM GEO-4 would reduce the risk of liquefaction during operation of the onshore tunnel, the JWPCP West shaft site, and the riser and diffuser area on the PV Shelf. Residual impacts would be less than significant.

NEPA Impact Determination

Operation of the onshore tunnel, the JWPCP West shaft site, and the riser and diffuser area on the PV Shelf for Alternative 3 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 3 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-4.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-5. Would Alternative 3 (Project) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?

Shaft Site – JWPCP West

Construction

CEQA Analysis

The shaft construction area is flat. The soils at the JWPCP West shaft site have a low-moderate to high erosion potential (Table 8-6). During construction, earthmoving operations could increase short-term erosion. If soil is improperly handled and stored, sedimentation could occur, resulting in a significant impact. However, as described in Section 8.3.2.4, a SWPPP would be prepared prior to construction. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis
The shaft construction area is generally flat and the potential for soil erosion and sediment runoff exists. During construction, earthmoving operations could increase short-term erosion. If soil is improperly handled and stored, sedimentation could occur, resulting in a significant impact. However, as described in Section 8.3.2.4, a SWPPP would be prepared prior to construction. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction of Alternative 3 (Project) would not substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Residual impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 3 (Project) would not substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Residual impacts would be less than significant.

Impact GEO-6. Would Alternative 3 (Project) result in unstable earth conditions or changes in geologic substructure?

Excavations for project facilities such as tunnels or shafts can potentially cause unstable earth conditions and changes in geologic substructure that can result in collapse or settlement of overlying or adjacent geologic materials (i.e., unconsolidated sediments) and consequent damage to any structures that are

constructed upon these materials. The potential for subsidence to develop over a tunnel excavation and its influence on buildings in the settlement zone is an important concern for any tunnel project.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

A portion of the onshore tunnel would be in soft ground where ground losses could occur at the tunnel heading or shield. Settlement of the land surface above the tunnel could have adverse effects along Figueroa Boulevard and, less likely, along Gaffey Street, where the tunnel would be in Miocene sedimentary formations. Changes in geologic substructure could occur during construction as a result of settlement while tunneling in unconsolidated sedimentary formations.

Settlement potential during tunneling is partly a function of geologic conditions and ground loss at the tunnel heading and shield. The ground loss volume would be dependent on the tunnel contractor's means and methods, overall workmanship, and subsurface geology encountered. The design intent is to minimize ground surface settlements during tunnel construction to a level that is imperceptible to third parties and agencies (Parsons 2011). Impacts would be significant, but implementation of MM GEO-6a and MM GEO-6b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Once the tunnel is constructed, there would be minimal risk of instability. Unstable earth conditions or changes in geologic structure would be unlikely. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

The offshore tunnel would be in Miocene sedimentary formations, which have a low likelihood of ground losses during tunneling. It is unlikely that settlement of the seafloor as a result of changes in geologic substructure or unstable earth conditions would occur. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis
Once the tunnel is constructed, there would be minimal risk of instability. Unstable earth conditions or changes in geologic structure would be unlikely. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – JWPCP West

Construction

CEQA Analysis
Shaft excavation at the JWPCP West shaft site would be in unconsolidated sediments (soft ground), which could be prone to instability during construction. Dewatering or groundwater leakage into the shaft could be reflected in ground settlement and/or surface cracking at the shaft. Ground surface settlements, cracking, trench collapse, or other indications of ground failure could result from unstable earth conditions, causing changes in the geologic structure in the vicinity of the shaft. Once the shaft is constructed and during tunnel construction, there would be minimal risk of instability. Impacts during shaft construction would be significant, but implementation of MM GEO-6a and MM GEO-6b would reduce impacts to less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
An access structure from the ground surface to the tunnel would be constructed at the JWPCP West shaft site. Once the access structure is constructed, there would be minimal risk of instability. Unstable earth conditions or changes in geologic structure would be unlikely. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis
Construction of the shaft at Angels Gate could result in unstable earth conditions in the vicinity of the shaft, although this would be less likely in relatively strong sedimentary formations such as Altimira Shale. If weak bedding layers were exposed in cut slopes, localized slope instability could occur. Slope

movements could affect nearby natural slopes. Once the shaft is constructed and during tunnel drilling, there would be minimal risk of instability. Impacts during shaft construction would be significant, but implementation of MM GEO-6a and MM GEO-6b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at the Angels Gate shaft site. Once the access structure is constructed, there would be minimal risk of instability. Unstable earth conditions or changes in geologic structure would be unlikely. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the onshore tunnel and the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) would result in unstable earth conditions or changes in geologic substructure. Impacts under CEQA would be significant before mitigation. Operation of Alternative 3 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-6a and MM GEO-6b.

Residual Impacts

MM GEO-6a and MM GEO-6b would reduce the impacts of unstable earth conditions during construction of the onshore tunnel and the JWPCP West and Angels Gate shaft sites to less than significant.

NEPA Impact Determination

Construction of the onshore tunnel and the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) would result in unstable earth conditions or changes in geologic substructure. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 3 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-6a and MM GEO-6b.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-7. Would Alternative 3 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?

Shaft Site – JWPCP West

Construction

CEQA Analysis

As shown in Table 8-6, the JWPCP West shaft site would be located primarily in areas of artificial fill soils at the ground surface where natural topsoils likely have been previously disturbed and/or covered by fill. The existing fill soils in these areas likely have low to negligible expansion potential inasmuch as typical engineering practice is to use granular, non-expansive soil as imported fill material. Surface improvements at the shaft site would be designed based on the site soil conditions. The expansion potential would be evaluated and expansive soils, if present, would be remediated, as necessary, through implementation of MM GEO-7 to less than significant.

The shafts would be excavated through existing surficial fill soil into the underlying Lakewood Formation deposits. The predominantly granular silty and sandy soils below the fill are likely to have little to no expansion potential. The anticipated shaft excavation and the shaft itself would be mostly below the water table where soils would not be susceptible to shrink-swell soil behavior. The expansion potential of subsurface soils would be evaluated and expansive soils, if present, would be remediated for the shaft and access structure design through implementation of MM GEO-7 to reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at the shaft site. Shrink-swell soils, if encountered, would be remediated during construction with implementation of MM GEO-7. Measures to remediate expansive soils would protect facilities during operation. Therefore, impacts during operation would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

Portions of Altimira Shale or other sedimentary formations within the shaft excavation are predominantly clayey and could contain swelling clay with shrink-swell behavior. The anticipated shaft excavation and the shaft itself would be mostly below the water table where soils would not be susceptible to

shrink-swell soil behavior. The shaft support system, retaining walls, and access structure would be designed to withstand earth pressures, including potential adverse effects of swelling clay soils, if present. Expansive soils would be identified and remediated through implementation of MM GEO-7 to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at the shaft site. Shrink-swell soils, if encountered, would be remediated during construction with implementation of MM GEO-7. Measures to remediate expansive soils would protect facilities during operation. Therefore, impacts during operation would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) could be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures. Impacts under CEQA would be significant before mitigation. Operation of Alternative 3 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-7.

Residual Impacts

Impacts associated with expansive soils at the JWPCP West and Angels Gate shaft sites would be remediated with implementation of MM GEO-7 during construction. Residual impacts would be less than significant.

NEPA Impact Determination

Construction at the JWPCP West and Angels Gate shaft sites for Alternative 3 (Project) could be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 3 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-7.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-8. Would Alternative 3 (Project) destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features? Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands?

Shaft Site – Angels Gate

Marine terraces represent wave-cut platforms that subsequently become covered with sediment from subaerial erosion processes. The seaward edges of the wave-cut platforms become modified by the natural processes of wind, rain, and runoff, which form coastal bluffs. Coastal bluffs are often windy and dry, with shallow, salty soil. The bluffs typically support a specialized community of plants and animals that have adapted to them. Coastal bluffs may be considered prominent natural landforms. Coastal developments are typically sited to minimize alteration of natural landforms, such as coastal bluffs. The shaft at Angels Gate would be located at the toe of the coastal bluff separating the first and second emergent marine terraces at Point Fermin (Woodring et al. 1946).

Construction

CEQA Analysis

The sloping hillside areas of the shaft site are part of a broader coastal bluff below Angels Gate Park. Coastal bluffs are considered prominent geologic and topographic features created in response to marine and subaerial (non-marine) erosion. The shape and form of the coastal bluff reflects the strength and erosion resistance of the geologic materials comprising the bluff. Extensive urban development has taken place on marine terraces throughout Palos Verdes and San Pedro. The coastal bluff along Paseo Del Mar may have been previously modified by grading. Site preparation and construction at the shaft site would not involve making significant new cuts into the slope and would not further modify the form and shape of the coastal bluff. Ample level ground area exists at the site such that the construction staging area would not require grading significant new cut slopes. Therefore, construction at the Angels Gate shaft site would not result in modification of a prominent geologic or topographic feature. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

8.4.5.3 Impact Summary – Alternative 3

Impacts on geology, soils, and mineral resources for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 8-13. Impacts analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 8-16. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 8-16. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact GEO-1. Would Alternative 3 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM GEO-1. Perform geotechnical investigations and provide site-specific recommendations for stabilization of temporary and permanent slopes and excavations to reduce risks to structures and construction workers associated with landslides, mudslides, or ground failure. The geotechnical investigation will address the requirements of local grading ordinances, as appropriate. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact GEO-2. Would Alternative 3 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-2. Perform site-specific fault hazard investigations to minimize fault rupture damage and facilitate repair of structures damaged as a result of fault movement. The investigations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. Geologic evaluations of fault crossings will include information to define fault location, fault slip, angle of intersection at the crossing, type of fault slip, width of disturbance, fault dip angle, and design fault displacement. Remediation measures may include engineered backfill, special lining systems, and/or special access provisions for repair. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-2	NEPA Less Than Significant Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Angels Gate	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact GEO-3. Would Alternative 3 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3. Perform geotechnical investigations and provide site-specific recommendations for reducing the adverse effects of seismic ground shaking on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California, and will be in compliance with current building codes, as applicable, to reduce the risk of seismic shaking. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact GEO-4. Would Alternative 3 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4. Perform geotechnical investigations and provide site-specific recommendations to reduce the impacts of liquefaction on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact GEO-5. Would Alternative 3 (Project) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact GEO-6. Would Alternative 3 (Project) result in unstable earth conditions or changes in geologic substructure?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Construction	N/A	MM GEO-6a. During the final design process, perform geotechnical investigations to provide characterization of the subsurface conditions and anticipated ground behavior along the selected tunnel route and at the shaft sites. The objective of these investigations will be to reduce the potential impacts of shaft excavation instability and ground settlement along the tunnel. The investigation will address facilities at risk of damage due to potential tunneling-induced settlements or shaft instability. An appropriate shaft excavation method that minimizes the risk of excavation instability and ground settlement in the vicinity of the shaft will be recommended. Geotechnical criteria for stabilization of shaft excavations will be incorporated into the project design to ensure the safety and stability of excavations. Recommendations for control and monitoring of the tunnel boring machine excavation and proper installation of the tunnel lining system to avoid excessive ground loss at the tunnel heading and shield will be made. Project design documents will also specify contingency measures that will be implemented if excessive settlement were to occur during construction.	CEQA Less Than Significant Impact During Construction

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			MM GEO-6b. Develop a detailed plan for construction monitoring that will minimize potential ground surface settlements at the shafts and along the onshore tunnel. The objective of the plan will be to reduce the risk of construction instability and to confirm that ground surface settlement is kept to a level that avoids damage to structures above or along the tunnel alignment. The plan will describe the specific monitoring that will be performed before, during, and after construction. Instrumentation (e.g., survey monuments, slope inclinometers, and/or extensometers) may be used to accurately quantify parameters of ground and structure behaviors and to monitor the rate of change. Contingent construction approaches will be implemented if excessive settlement occurs. The plan will address municipality, agency, and third party settlement tolerance requirements as appropriate for the shaft sites and tunnel alignment. Geotechnical inspections will be performed during construction to confirm the encountered subsurface conditions and to provide recommendations for alternate settlement control approaches, if warranted. If the construction monitoring program detects the occurrence of excessive settlement and alternative settlement control measures are inadequate to meet settlement specifications, then further excavation will cease until additional ground support measures are implemented to alleviate the settlement as directed by the project engineer.	
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact GEO-7. Would Alternative 3 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?				
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM GEO-7. Perform geotechnical investigations and provide site-specific recommendations to reduce the risk of adverse effects on structures due to shrink-swell soil behavior. The investigations will include an analysis of soil expansion potential (i.e., American Society for Testing and Materials D-4829). Remediation may include expansive soil removal, reinforced foundations, and/or special pavement design. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Significant Impact During Construction	N/A	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 8-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact GEO-8. Would Alternative 3 (Project) destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features? Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands?				
Shaft Site				
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

8.4.6 Alternative 4 (Recommended Alternative)

8.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

8.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years. The construction impacts for the rehabilitation of the existing ocean outfalls for Alternative 4 (Project) would be the same as for Alternative 1 (Project). Operational impacts would be the same as baseline conditions; therefore, there would be no operational impacts for the existing ocean outfalls under Alternative 4 (Project).

Impact GEO-1. Would Alternative 4 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

The Figueroa/Western to Royal Palms onshore tunnel profile would be at depths between about 70 and 450 feet bgs, with the exception of Royal Palms Beach, which would be approximately 50 feet bgs. The tunnel profile would not pass below or near known landslides (Dibblee 1999) and would not result in renewed landslide movement during construction. Landslide activity in 2011 on Paseo Del Mar near White Point County Beach has raised questions about the potential for proposed tunneling activities to affect the stability of the existing slopes in the area. The onshore tunnel alignment would be located about 2,000 feet west of the landslide activity near White Point County Beach. This landslide activity is likely due to weak bedding planes in areas where the bedrock dips unfavorably (out of slope). These slope instabilities are less likely to occur to the west where the onshore tunnel alignment would be located along favorably oriented geologic bedding such as what has been mapped by Dibblee in the project area (Appendix 8-A). Therefore, deep-seated ground failure is considered a low geologic hazard during construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Operation of the onshore tunnel would not result in landslides or ground failure because the tunnel would not be near known landslides along or near the alignment. Deep-seated ground failure is considered a low geologic hazard during operation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis

The Royal Palms shaft site is not in a mapped landslide area (Dibblee 1999). However, construction of the shaft would be in Altimira Shale that could contain weak layers below the water table. Excavation instability is a construction risk that could result in ground failure in the vicinity of the shaft. This would represent a significant impact. Once the shaft is constructed, there would be minimal risk of instability during tunnel construction. Implementation of MM GEO-1 would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at the Royal Palms shaft site. The Royal Palms shaft site is not in a known landslide areas (Dibblee 1999); therefore, the hazard of ground failure during operation would be low. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) could expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure. Impacts under CEQA would be significant before mitigation. Operation of Alternative 4 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-1.

Residual Impacts

MM GEO-1 would reduce impacts during construction at the JWPCP West and Royal Palms shaft sites to less than significant.

NEPA Impact Determination

Construction at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) could expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 4 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-1.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-2. Would Alternative 4 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving rupture of a known earthquake fault?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis
The onshore tunnel would cross the active Palos Verdes Fault just south of Harbor Regional Park under North Gaffey Street (Fugro 2011). The onshore tunnel also crosses the Cabrillo Fault at the intersection of South Dodson Avenue and Western Avenue. The Cabrillo Fault may also be active, but it would likely move only in response to large earthquakes involving the Palos Verdes Fault (Fugro 2011).

Due to the infrequent occurrence of fault rupture on the Palos Verdes and Cabrillo Faults and the relatively short duration of construction, the probability that a fault rupture would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from surface fault rupture during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
Operation of the onshore tunnel could be affected by fault rupture in the event of a large earthquake along the Palos Verdes Fault. A tunnel liner system would be installed along the portion of the tunnel that crosses the Palos Verdes Fault to minimize the potential for damage due to fault rupture. In the event of fault rupture, there could be some damage to the tunnel, and operation could be affected during system repair. Impacts would be a significant before mitigation. Implementation of MM GEO-2 would reduce the risk of tunnel damage and facilitate repair following an earthquake to a less than significant level.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis
The shaft site is not near or within an active fault zone (Hart and Bryant 1997). Therefore, there would be no risk of fault rupture on site during construction, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
An access structure from the ground surface to the tunnel would be constructed at the shaft site. The shaft site is not near or within a mapped active fault zone. Therefore, there would be no risk of fault rupture on site during operation, and there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Operation of the onshore tunnel for Alternative 4 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving rupture of a known earthquake fault. Impacts under CEQA would be significant before mitigation. Construction of Alternative 4 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-2.

Residual Impacts
Implementation of MM GEO-2 would reduce the risk of onshore tunnel damage and would facilitate repairs. Residual impacts would be less than significant.

NEPA Impact Determination
Operation of the onshore tunnel for Alternative 4 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving rupture of a known earthquake fault. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 4 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-2.

Residual Impacts
Residual impacts would be less than significant, as described under CEQA.

Impact GEO-3. Would Alternative 4 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?

The tunnel, shafts, riser and diffuser, and existing ocean outfalls would be potentially exposed to seismic ground shaking in response to earthquakes on local and regional faults, as shown in Table 8-7, Table 8-8, and Table 8-9. Strong seismic shaking could cause damage during construction and operation of the facilities.

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

The onshore tunnel alignment for Alternative 4 (Project) is in a seismically active area. Strong seismic ground shaking could occur during construction of the tunnel. Seismic ground shaking during construction could damage the tunnel lining and equipment supporting tunnel construction. There is also a risk that earthquake shaking could result in disruption of power, so there would be emergency generators on site to support operation of critical systems such as tunnel ventilation (see Chapter 16 for a discussion of emergency management plans and response). However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

The hazard of seismic shaking would exist over the design life of the tunnel. The relative likelihood of strong seismic shaking during operation would be greater than during construction due to the increased time frame of seismic exposure during the design life of Alternative 4 (Project). Buried structure connections can be vulnerable to seismic ground shaking. Proper seismic design would allow buried structures to withstand seismic shaking without significant damage. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis

Strong seismic shaking during the time frame of construction could result in damage to the shaft excavation temporary support system. Seismic shaking could also damage onsite support facilities such as generators and substations, ventilation systems, cranes and possibly other facilities. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activity is low. Therefore, this hazard is considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Once the permanent access structure is constructed below the ground surface, there would be some potential for damage as a result of seismic shaking. The hazard of seismic shaking would exist over the design life of the buried access structure. The relative likelihood of strong seismic shaking during operation would be greater than that during construction due to the increased time frame of seismic exposure during the design life of Alternative 4 (Project). Buried structure connections can be vulnerable to seismic shaking. Proper seismic design would allow buried structures to withstand seismic ground shaking without significant damage. Impacts would be significant before mitigation. Implementation of MM GEO-3 would reduce the impacts of seismic shaking during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Operation of the onshore tunnel and the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking. Impacts under CEQA would be significant before mitigation. Construction of Alternative 4 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-3.

Residual Impacts

Risks associated with ground shaking during operation of the onshore tunnel and the JWPCP West and Royal Palms shaft sites would be reduced with implementation of MM GEO-3. Residual impacts would be less than significant.

NEPA Impact Determination

Operation of the onshore tunnel and the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) could expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 4 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-3.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-4. Would Alternative 4 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?

Alternative 4 (Project) elements would be located in a seismically active area and could be exposed to strong, potentially damaging levels of seismic shaking. Based on the geologic setting, the potential for liquefaction exists at the project facilities as summarized in Table 8-7, Table 8-8, and Table 8-9.

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

The onshore tunnel would be between70 and 450 feet bgs, with the exception at Royal Palms Beach, where the tunnel would be approximately 50 feet bgs. A limited reach of the tunnel near the JWPCP West shaft site may be in potentially liquefiable Holocene materials due to its relatively shallow depth. The remaining portion of the tunnel would be in Pleistocene and Miocene sedimentary formations, which are not potentially liquefiable. Liquefaction could potentially have adverse effects on people or structures during construction at the north end of the tunnel near the JWPCP. However, due to the infrequent occurrence of seismic ground shaking and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Therefore, this hazard is typically considered to pose an acceptable level of risk. That is, the level of injury and material/property loss that could potentially occur from seismic activity during construction is considered to be acceptable in view of the cost/benefit of any mitigation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Although during operation of the tunnel the risk of liquefaction hazard would be low, seismic shaking could result in liquefaction along the limited reach of tunnel near the JWPCP that may be in potentially

liquefiable Holocene materials. This would be a significant impact before mitigation. Implementation of MM GEO-4 would reduce the impacts of liquefaction during operation to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis

The shaft site would be in Miocene sedimentary formations, which are not subject to liquefaction. Therefore, liquefaction would not present a significant geologic hazard during construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at this shaft site. The Royal Palms access structure would be in Miocene sedimentary formations, which are not subject to liquefaction. Therefore, liquefaction would not present a significant geologic hazard during operation. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Operation of the onshore tunnel and the JWPCP West shaft site for Alternative 4 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking. Impacts under CEQA would be significant before mitigation. Construction of Alternative 4 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-4.

Residual Impacts

MM GEO-4 would reduce the risk of liquefaction during operation of the onshore tunnel and the JWPCP West shaft site. Residual impacts would be less than significant.

NEPA Impact Determination

Operation of the onshore tunnel and the JWPCP West shaft site for Alternative 4 (Project) could expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Construction of Alternative 4 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-4.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-5. Would Alternative 4 (Project) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?

Shaft Site – Royal Palms

Construction

CEQA Analysis

The shaft construction area is sloped, and the potential for soil erosion and sediment runoff exists. During construction, earthmoving operations could increase short-term erosion. If soil is improperly handled and stored, sedimentation could occur, resulting in a significant impact. However, as described in Section 8.3.2.4, a SWPPP would be prepared prior to construction. Therefore, impacts associated with sediment runoff or deposition would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact GEO-6. Would Alternative 4 (Project) result in unstable earth conditions or changes in geologic substructure?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)
Excavations for project facilities such as tunnels or shafts can potentially cause unstable earth conditions and changes in geologic substructure that can result in collapse or settlement of overlying or adjacent geologic materials (i.e., unconsolidated sediments) and consequent damage to any structures that are constructed upon these materials. The potential for subsidence to develop over a tunnel excavation and its influence on buildings in the settlement zone is an important concern for any tunnel project.

Construction

CEQA Analysis
A portion of the tunnel would be in soft ground where ground losses could occur at the tunnel heading or shield. Settlement of the land surface above the tunnel could have adverse effects along Figueroa Boulevard. Settlement along Western Avenue, where the tunnel would be in Miocene sedimentary formations, is less likely. Changes in geologic substructure could occur during construction as a result of settlement while tunneling in unconsolidated sedimentary formations.

Settlement potential during tunneling is partly a function of geologic conditions and ground loss at the tunnel heading and shield. The ground loss volume would be dependent on the tunnel contractor's means and methods, overall workmanship, and subsurface geology encountered. The design intent is to minimize ground surface settlements during tunnel construction to a level that is imperceptible to third parties and agencies (Parsons 2011). Impacts would be significant, but implementation of MM GEO-6a and MM GEO-6b would reduce impacts to less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
Once the tunnel is constructed, there would be minimal risk of instability. Unstable earth conditions or changes in geologic structure would be unlikely. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis

Construction of the shaft at Royal Palms could result in unstable earth conditions in the vicinity of the shaft. For example, weak layers in Altimira Shale could be exposed in construction cuts. Slope instability could create slope movement. If the nearby natural slopes were affected, an unstable earth condition could occur over a broader area than the shaft. Once the shaft is constructed and during tunnel drilling, there would be minimal risk of instability. Impacts during shaft construction would be significant, but implementation of MM GEO-6a and MM GEO-6b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

An access structure from the ground surface to the tunnel would be constructed at the Royal Palms shaft site. Once the access structure is constructed, there would be minimal risk of instability. Unstable earth conditions or changes in geologic structure would be unlikely. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the onshore tunnel and the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) would result in unstable earth conditions or changes in geologic substructure. Impacts under CEQA would be significant before mitigation. Operation of Alternative 4 (Project) would result in less than significant impacts.

Mitigation

Implement MM GEO-6a and MM GEO-6b.

Residual Impacts

MM GEO-6a and MM GEO-6b would reduce the impacts of unstable earth conditions during construction of the onshore tunnel and the JWPCP West and Royal Palms shaft sites. Residual impacts would be less than significant.

NEPA Impact Determination

Construction of the onshore tunnel and the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) would result in unstable earth conditions or changes in geologic substructure. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 4 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-6a and MM GEO-6b.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-7. Would Alternative 4 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?

Shaft Site – Royal Palms

Construction

CEQA Analysis
Portions of Altimira Shale or other sedimentary formations within the shaft excavation are predominantly clayey and could contain swelling clay with shrink-swell behavior. The shaft support system, retaining walls, and access structure would be designed to withstand earth pressures, including potential adverse effects of swelling clay soils, if present. Expansive soils would be identified and remediated through implementation of MM GEO-7 to reduce impacts to less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
An access structure from the ground surface to the tunnel would be constructed at the shaft site. Shrink-swell soils, if encountered, would be remediated during construction with implementation of MM GEO-7. Measures to remediate expansive soils would protect facilities during operation. Therefore, impacts during operation would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) could be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures. Impacts under CEQA would be significant before mitigation. Operation of Alternative 4 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-7.

Residual Impacts
Impacts associated with expansive soils at the JWPCP West and Royal Palms shaft sites would be remediated with implementation of MM GEO-7 during construction. Residual impacts would be less than significant.

NEPA Impact Determination
Construction at the JWPCP West and Royal Palms shaft sites for Alternative 4 (Project) could be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 4 (Project) would result in less than significant impacts.

Mitigation
Implement MM GEO-7.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact GEO-8. Would Alternative 4 (Project) destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features? Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands?

Shaft Site – Royal Palms
Marine terraces represent wave-cut platforms that subsequently become covered with sediment from subaerial erosion processes. Marine terraces are striking geologic features in the Palos Verdes Hills, as noted by Woodring et al. (1946). At least 13 uplifted marine terraces are present at Palos Verdes, ranging in altitude between about 100 and 1,300 feet. The lower terraces are better preserved and more conspicuous in form and shape. The Sanitation District's existing ocean outfalls manifold structure is within the first emergent marine terrace.

<u>Construction</u>

CEQA Analysis
The majority of the construction at Royal Palms would be located within the fenced area around the existing manifold structure. To the extent possible, final ground conditions at ground level would not appear substantially different than current conditions (Parsons 2011). Impacts on the marine terrace landform or other distinct or prominent geologic or topographic features would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction of Alternative 4 (Project) would not destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 4 (Project) would not destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features. Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

8.4.6.3 Impact Summary – Alternative 4

Impacts on geology, soils, and mineral resources for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 8-13. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 8-17. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 8-17. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact GEO-1. Would Alternative 4 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant or Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-17 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM GEO-1. Perform geotechnical investigations and provide site-specific recommendations for stabilization of temporary and permanent slopes and excavations to reduce risks to structures and construction workers associated with landslides, mudslides, or ground failure. The geotechnical investigation will address the requirements of local grading ordinances, as appropriate. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Royal Palms	CEQA Significant Impact During Construction	N/A	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-1	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-17 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact GEO-2. Would Alternative 4 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-2. Perform site-specific fault hazard investigations to minimize fault rupture damage and facilitate repair of structures damaged as a result of fault movement. The investigations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. Geologic evaluations of fault crossings will include information to define fault location, fault slip, angle of intersection at the crossing, type of fault slip, width of disturbance, fault dip angle, and design fault displacement. Remediation measures may include engineered backfill, special lining systems, and/or special access provisions for repair. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-2	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Royal Palms	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 8-17 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Impact GEO-3. Would Alternative 4 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3. Perform geotechnical investigations and provide site-specific recommendations for reducing the adverse effects of seismic ground shaking on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California, and will be in compliance with current building codes, as applicable, to reduce the risk of seismic shaking. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-17 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-3	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact GEO-4. Would Alternative 4 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4. Perform geotechnical investigations and provide site-specific recommendations to reduce the impacts of liquefaction on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation

Table 8-17 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Significant Impact During Operation	N/A	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact During Operation	Indirect	MM GEO-4	NEPA Less Than Significant Impact During Operation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact GEO-5. Would Alternative 4 (Project) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 8-17 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact GEO-6. Would Alternative 4 (Project) result in unstable earth conditions or changes in geologic substructure?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Construction	N/A	MM GEO-6a. During the final design process, perform geotechnical investigations to provide characterization of the subsurface conditions and anticipated ground behavior along the selected tunnel route and at the shaft sites. The objective of these investigations will be to reduce the potential impacts of shaft excavation instability and ground settlement along the tunnel. The investigation will address facilities at risk of damage due to potential tunneling-induced settlements or shaft instability. An appropriate shaft excavation method that minimizes the risk of excavation instability and ground settlement in the vicinity of the shaft will be recommended. Geotechnical criteria for stabilization of shaft excavations will be incorporated into the project design to ensure the safety and stability of excavations. Recommendations for control and monitoring of the tunnel boring machine excavation and proper installation of the tunnel lining system to avoid excessive ground loss at the tunnel heading and shield will be made. Project design documents will also specify contingency measures that will be implemented if excessive settlement were to occur during construction. MM GEO-6b. Develop a detailed plan for construction monitoring that will minimize potential ground surface settlements at the shafts and along the onshore tunnel. The objective of the plan will be to reduce the risk of construction instability and to confirm that ground surface settlement is kept to a level that avoids damage to structures above or along the tunnel alignment. The plan will describe the specific monitoring that will be performed before, during, and after construction. Instrumentation (e.g., survey monuments, slope inclinometers, and/or extensometers) may be used to accurately quantify parameters of ground and structure behaviors and to	CEQA Less Than Significant Impact During Construction

Table 8-17 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			monitor the rate of change. Contingent construction approaches will be implemented if excessive settlement occurs. The plan will address municipality, agency, and third party settlement tolerance requirements as appropriate for the shaft sites and tunnel alignment. Geotechnical inspections will be performed during construction to confirm the encountered subsurface conditions and to provide recommendations for alternate settlement control approaches, if warranted. If the construction monitoring program detects the occurrence of excessive settlement and alternative settlement control measures are inadequate to meet settlement specifications, then further excavation will cease until additional ground support measures are implemented to alleviate the settlement as directed by the project engineer.	
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Royal Palms	CEQA Significant Impact During Construction	N/A	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact During Construction

Table 8-17 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Impact GEO-7. Would Alternative 4 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?				
Shaft Site				
JWPCP West	CEQA Significant Impact During Construction	N/A	MM GEO-7. Perform geotechnical investigations and provide site-specific recommendations to reduce the risk of adverse effects on structures due to shrink-swell soil behavior. The investigations will include an analysis of soil expansion potential (i.e., American Society for Testing and Materials D-4829). Remediation may include expansive soil removal, reinforced foundations, and/or special pavement design. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Royal Palms	CEQA Significant Impact During Construction	N/A	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM GEO-7	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 8-17 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
Impact GEO-8. Would Alternative 4 (Project) destroy, permanently cover, or materially and adversely modify one or more distinct and prominent geologic or topographic features? Such features may include, but are not limited to, hilltops, ridges, hillslopes, canyons, ravines, rock outcrops, water bodies, streambeds, and wetlands?				
Shaft Site				
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	Direct	No mitigation is required.	NEPA No Impact During Construction

8.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an environmental impact report (EIR) must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

8.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the SJCWRP, WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994).

8.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into the Wilmington Drain. The Wilmington Drain is a flood control structure extending from I-110 to the north side of Pacific Coast Highway. South of Pacific Coast Highway, the drain merges with the riparian woodland of Machado Lake (also known as Harbor Lake).

An emergency discharge into the Wilmington Drain would not expose people, structures, or property to landslides or ground failure. It would not cause or involve a rupture of a known earthquake fault or expose people or structures to seismic ground shaking because the discharge of effluent would not be affected by fault rupture. An emergency discharge would not deform the foundations or cause damage to structures because of shrink-swell potential because structures do not exist in the Wilmington Drain. The loss of important state, regional, or local mineral resources would not occur during an emergency discharge because no important mineral resources exist in the Wilmington Drain.

However, an emergency discharge during a wet-weather event could exceed the capacity of the Wilmington Drain. If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the JWPCP could overflow and untreated wastewater could enter various water courses, such as the Dominguez Channel and the Los Angeles River. The Dominguez Channel extends from the city of Carson and discharges into the Consolidated Slip of the Los Angeles Harbor just south of Anaheim Street. The south end of the Los Angeles River traverses the I-710 and discharges into the easterly end of the Los Angeles Harbor. Untreated wastewater overflowing out of the sewers would likely enter adjacent stormdrains tributary to the Dominguez Channel and the Los Angeles River. A sewer overflow would not cause or involve a rupture of a known earthquake fault or expose people or structures to seismic ground shaking because the sewer overflow would not be affected by fault rupture. The loss of important state, regional, or local mineral resources would not occur during an emergency discharge because no important mineral resources exist in either the Dominguez Channel or the Los Angeles River. The Dominguez Channel and the Los Angeles River are both fully lined concrete channels and, therefore, would not sustain any significant erosion or siltation.

However, an exceedance could result in mudslides, ground failure, and unstable earth conditions in the unlined portions of the Wilmington Drain, the various low-lying areas along the JOS where flooding would most likely occur, and possibly around Machado Lake. The Wilmington Drain, Machado Lake, and the various areas along the JOS where flooding may occur could be adversely modified during a wet-weather event and an emergency discharge. Therefore, impacts associated with these geologic resources would be significant. There is no feasible mitigation to reduce these impacts; therefore, impacts would be significant and unavoidable.

The Wilmington Drain is underlain by unconsolidated Holocene-Age alluvium (Dibblee 1999) and fill, likely with relatively high erosion potential. There are existing gabions along the drain margins upstream of the Pacific Coast Highway overpass, but the channel banks are mostly vegetated and unlined. Depending on the duration and volume, the emergency discharge into the drain could increase short-term erosion and sedimentation. The existing gabions at Pacific Coast Highway suggest the channel banks in the area may be vulnerable to scouring at least locally, requiring the additional erosion protection at the road crossing. However, increased sedimentation as a result of emergency discharge could have offsite water quality impacts and other issues.

Impacts under CEQA would be significant. While a SWPPP would reduce the impacts associated with erosion, a SWPPP would not be prepared for an emergency discharge. Therefore, there is no feasible mitigation, and impacts would remain significant and unavoidable.

8.4.7.3 Impact Summary – Alternative 5

Impacts on geology, soils, and mineral resources for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 8-13, excluding process optimization. Note that the mitigation measures for Alternatives 1 through 4 (Program) are not applicable to Alternative 5 (Program). Significant impacts for Alternative 5 (Project) are summarized in Table 8-18.

Table 8-18. Impact Summary – Alternative 5 (Project)

Project Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact GEO-5. Would Alternative 5 (Project) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation

8.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.6 and 8.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

8.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

8.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

8.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Significant impacts for Alternative 6 would be the same as summarized in Table 8-18 for Alternative 5 (Project).

8.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on geology, soils, and mineral resources resulting from the construction and/or operation of program and/or project elements is provided in Table 8-19. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact before and following mitigation under CEQA and NEPA are also listed in the table.

Table 8-19. Comparison of Significant Impacts and Mitigation for Geology, Soils, and Mineral Resources for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternatives 1, 2, 3, 4, and 5[a] (Program)			
Impact GEO-1. Would Alternatives 1, 2, 3, 4, and 5 (Program) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?			
POWRP – Process Optimization	CEQA Significant Impact During Construction	MM GEO-1. Perform geotechnical investigations and provide site-specific recommendations for stabilization of temporary and permanent slopes and excavations to reduce risks to structures and construction workers associated with landslides, mudslides, or ground failure. The geotechnical investigation will address the requirements of local grading ordinances, as appropriate. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Construction
Impact GEO-3. Would Alternatives 1, 2, 3, 4, and 5 (Program) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?			
SJCWRP – Plant Expansion and Process Optimization; POWRP, LCWRP, LBWRP – Process Optimization; JWPCP – Solids Processing	CEQA Significant Impact During Operation	MM GEO-3. Perform geotechnical investigations and provide site-specific recommendations for reducing the adverse effects of seismic ground shaking on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California, and will be in compliance with current building codes, as applicable, to reduce the risk of seismic shaking. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation
Impact GEO-4. Would Alternatives 1, 2, 3, 4, and 5 (Program) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?			
POWRP, LCWRP, LBWRP – Process Optimization	CEQA Significant Impact During Operation	MM GEO-4. Perform geotechnical investigations and provide site-specific recommendations to reduce the impacts of liquefaction on planned facilities. The investigations and recommendations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. The geotechnical recommendations will be incorporated into the final design and construction of new facilities, as deemed appropriate by the project engineer.	CEQA Less Than Significant Impact During Operation

Table 8-19 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GEO-7. Would Alternatives 1, 2, 3, 4, and 5 (Program) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?			
SJCWRP – Plant Expansion and Process Optimization; POWRP, LCWRP, LBWRP – Process Optimization; JWPCP – Solids Processing	CEQA Significant Impact During Operation	MM GEO-7. Perform geotechnical investigations and provide site-specific recommendations to reduce the risk of adverse effects on structures due to shrink-swell soil behavior. The investigations will include an analysis of soil expansion potential (i.e., American Society for Testing and Materials D-4829). Remediation may include expansive soil removal, reinforced foundations, and/or special pavement design. The geotechnical recommendations will be incorporated into the final design and construction of new facilities.	CEQA Less Than Significant Impact During Operation
[a] Process optimization would not apply to Alternative 5 (Program). Additionally, all mitigation measures and residual impacts would not apply to Alternative 5 (Program).			

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 1 (Project)			
Impact GEO-1. Would Alternative 1 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?			
Shaft Sites – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-1	NEPA Less Than Significant Impact (Indirect) During Construction
Impact GEO-2. Would Alternative 1 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault?			
Tunnel Alignment – Wilmington to SP Shelf (Offshore)	CEQA Significant Impact During Operation	MM GEO-2. Perform site-specific fault hazard investigations to minimize fault rupture damage and facilitate repair of structures damaged as a result of fault movement. The investigations will be conducted in accordance with current California Geological Survey guidelines for evaluating and mitigating seismic hazards in California. Geologic evaluations of fault crossings will include information to define fault location, fault slip, angle of intersection at the crossing, type of fault slip, width of disturbance, fault dip angle, and design fault displacement. Remediation measures may include engineered backfill, special lining systems, and/or special access provisions for repair. The geotechnical recommendations will be incorporated into the final design and construction of new facilities.	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-2	NEPA Less Than Significant Impact (Indirect) During Operation

Table 8-19 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GEO-3. Would Alternative 1 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?			
Tunnel Alignment – Wilmington to SP Shelf (Onshore)	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Tunnel Alignment – Wilmington to SP Shelf (Offshore)	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Shaft Sites – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Riser/Diffuser Area – SP Shelf	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Impact GEO-4. Would Alternative 1 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?			
Shaft Sites – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-4	NEPA Less Than Significant Impact (Indirect) During Operation
Riser/Diffuser Area – SP Shelf	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-4	NEPA Less Than Significant Impact (Indirect) During Operation

Table 8-19 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GEO-6. Would Alternative 1 (Project) result in unstable earth conditions or changes in geologic substructure?			
Tunnel Alignment – Wilmington to SP Shelf (Onshore)	CEQA Significant Impact During Construction	MM GEO-6a. During the final design process, perform geotechnical investigations to provide characterization of the subsurface conditions and anticipated ground behavior along the selected tunnel route and at the shaft sites. The objective of these investigations will be to reduce the potential impacts of shaft excavation instability and ground settlement along the tunnel. The investigation will address facilities at risk of damage due to potential tunneling-induced settlements or shaft instability. An appropriate shaft excavation method that minimizes the risk of excavation instability and ground settlement in the vicinity of the shaft will be recommended. Geotechnical criteria for stabilization of shaft excavations will be incorporated into the project design to ensure the safety and stability of excavations. Recommendations for control and monitoring of the tunnel boring machine excavation and proper installation of the tunnel lining system to avoid excessive ground loss at the tunnel heading and shield will be made. Project design documents will also specify contingency measures that will be implemented if excessive settlement were to occur during construction. MM GEO-6b. Develop a detailed plan for construction monitoring that will minimize potential ground surface settlements at the shafts and along the onshore tunnel. The objective of the plan will be to reduce the risk of construction instability and to confirm that ground surface settlement is kept to a level that avoids damage to structures above or along the tunnel alignment. The plan will describe the specific monitoring that will be performed before, during, and after construction. Instrumentation (e.g., survey monuments, slope inclinometers, and/or extensometers) may be used to accurately quantify parameters of ground and structure behaviors and to monitor the rate of change. Contingent construction approaches will be implemented if excessive settlement occurs. The plan will address municipality, agency, and third party settlement tolerance requirements as appropriate for the shaft sites and tunnel alignment. Geotechnical inspections will be performed during construction to confirm the encountered subsurface conditions and to provide recommendations for alternate settlement control approaches, if warranted. If the construction monitoring program detects the occurrence of excessive settlement, and alternative settlement control measures are inadequate to meet settlement specifications, then further excavation will cease until additional ground support measures are implemented to arrest the settlement as directed by the project engineer.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact (Indirect) During Construction
Tunnel Alignment – Wilmington to SP Shelf (Offshore)	CEQA Significant Impact During Construction	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact (Indirect) During Construction

Table 8-19 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Shaft Sites – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact (Indirect) During Construction
Impact GEO-7. Would Alternative 1 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?			
Shaft Sites – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-7	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 2 (Project)			
Impact GEO-1. Would Alternative 2 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?			
Shaft Sites – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-1	NEPA Less Than Significant Impact (Indirect) During Construction
Impact GEO-2. Would Alternative 2 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault?			
Tunnel Alignment – Wilmington to PV Shelf (Offshore)	CEQA Significant Impact During Operation	MM GEO-2	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-2	NEPA Less Than Significant Impact (Indirect) During Operation
Impact GEO-3. Would Alternative 2 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?			
Tunnel Alignment – Wilmington to PV Shelf (Onshore)	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Tunnel Alignment – Wilmington to PV Shelf (Offshore)	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation

Table 8-19 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Shaft Sites – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Riser/Diffuser Area – PV Shelf	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Impact GEO-4. Would Alternative 2 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?			
Shaft Sites – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-4	NEPA Less Than Significant Impact (Indirect) During Operation
Riser/Diffuser Area – PV Shelf	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-4	NEPA Less Than Significant Impact (Indirect) During Operation
Impact GEO-6. Would Alternative 2 (Project) result in unstable earth conditions or changes in geologic substructure?			
Tunnel Alignment – Wilmington to PV Shelf (Onshore)	CEQA Significant Impact During Construction	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact (Indirect) During Construction
Tunnel Alignment – Wilmington to PV Shelf (Offshore)	CEQA Significant Impact During Construction	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact (Indirect) During Construction

Table 8-19 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Shaft Sites – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact (Indirect) During Construction
Impact GEO-7. Would Alternative 2 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?			
Shaft Sites – JWPCP East, TraPac, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-7	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 3 (Project)			
Impact GEO-1. Would Alternative 3 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?			
Shaft Site – JWPCP West	CEQA Significant Impact During Construction	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-1	NEPA Less Than Significant Impact (Indirect) During Construction
Impact GEO-2. Would Alternative 3 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault?			
Tunnel Alignment – Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Operation	MM GEO-2	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-2	NEPA Less Than Significant Impact (Indirect) During Operation
Impact GEO-3. Would Alternative 3 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?			
Tunnel Alignment – Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Tunnel Alignment – Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation

Table 8-19 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Shaft Sites – JWPCP West, Angels Gate	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Riser/Diffuser Area – PV Shelf	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Impact GEO-4. Would Alternative 3 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?			
Tunnel Alignment – Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-4	NEPA Less Than Significant Impact (Indirect) During Operation
Shaft Site – JWPCP West	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-4	NEPA Less Than Significant Impact (Indirect) During Operation
Riser/Diffuser Area – PV Shelf	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-4	NEPA Less Than Significant Impact (Indirect) During Operation
Impact GEO-6. Would Alternative 3 (Project) result in unstable earth conditions or changes in geologic substructure?			
Tunnel Alignment – Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Construction	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact (Indirect) During Construction
Shaft Sites – JWPCP West, Angels Gate	CEQA Significant Impact During Construction	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction

Table 8-19 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
	NEPA Significant Impact (Indirect) During Construction	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact (Indirect) During Construction
Impact GEO-7. Would Alternative 3 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?			
Shaft Sites – JWPCP West, Angels Gate	CEQA Significant Impact During Construction	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-7	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 4 (Project)			
Impact GEO-1. Would Alternative 4 (Project) expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure?			
Shaft Site – JWPCP West, Royal Palms	CEQA Significant Impact During Construction	MM GEO-1	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-1	NEPA Less Than Significant Impact (Indirect) During Construction
Impact GEO-2. Would Alternative 4 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving rupture of a known earthquake fault?			
Tunnel Alignment – Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Operation	MM GEO-2	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-2	NEPA Less Than Significant Impact (Indirect) During Operation
Impact GEO-3. Would Alternative 4 (Project) expose people or structures to a potential substantially adverse effect, including the risk of loss, injury, or death involving strong seismic ground shaking?			
Tunnel Alignment – Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation
Shaft Sites – JWPCP West, Royal Palms	CEQA Significant Impact During Operation	MM GEO-3	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-3	NEPA Less Than Significant Impact (Indirect) During Operation

Table 8-19 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GEO-4. Would Alternative 4 (Project) expose people or structures to a potential substantially adverse effect including the risk of loss, injury, or death involving substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking?			
Tunnel Alignment – Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-4	NEPA Less Than Significant Impact (Indirect) During Operation
Shaft Site – JWPCP West	CEQA Significant Impact During Operation	MM GEO-4	CEQA Less Than Significant Impact During Operation
	NEPA Significant Impact (Indirect) During Operation	MM GEO-4	NEPA Less Than Significant Impact (Indirect) During Operation
Impact GEO-6. Would Alternative 4 (Project) result in unstable earth conditions or changes in geologic substructure?			
Tunnel Alignment – Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Construction	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact (Indirect) During Construction
Shaft Sites – JWPCP West, Royal Palms	CEQA Significant Impact During Construction	MM GEO-6a MM GEO-6b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-6a MM GEO-6b	NEPA Less Than Significant Impact (Indirect) During Construction
Impact GEO-7. Would Alternative 4 (Project) be located in soil characterized by shrink-swell potential that might result in deformation of foundations or damage to structures?			
Shaft Sites – JWPCP West, Royal Palms	CEQA Significant Impact During Construction	MM GEO-7	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM GEO-7	NEPA Less Than Significant Impact (Indirect) During Construction
Alternatives 5 (Project)			
Impact GEO-5. Would Alternative 5 (Project) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation

Table 8-19 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternatives 6 (Project)			
Impact GEO-5. Would Alternative 6 (Project) substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?			
Emergency Discharge	NEPA Significant Impact During Operation	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Operation

Chapter 9
GREENHOUSE GAS EMISSIONS

9.1 Introduction

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere. They are emitted by both natural (biogenic) and man-made (anthropogenic) sources. The Intergovernmental Panel on Climate Change (IPCC) has identified the following principal GHGs:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride

A GHG's potency or ability to trap heat in the atmosphere is expressed in terms of its global warming potential (GWP). By convention, CO_2 is assigned a GWP of 1. All other GHGs are compared to CO_2. For example, according to the 1996 IPCC Second Assessment Report (SAR), CH_4 has a GWP of 21, which means that it is 21 times more powerful than CO_2 at trapping heat in the atmosphere. N_2O has a GWP of 310[1]. GHG emissions are reported in terms of CO_2-equivalents (CO_2e) because they are compared to CO_2. When several GHGs are emitted from the same source, the total CO_2e is calculated by multiplying the mass emissions of each GHG by its respective GWP and adding all the products.

IPCC data suggests that the earth's temperature is influenced by the accumulation of GHGs in the atmosphere. Man-made GHG emissions associated with fossil fuel combustion have elevated the concentration of GHGs in the atmosphere above natural levels. According to the IPCC, the atmospheric concentration of CO_2 has increased from pre-industrial levels of 280 parts per million (ppm) to 379 ppm in 2005. The increase in man-made GHG emissions in that time has apparently contributed to higher global temperatures near the earth's surface over the same time period. This suggested relationship between the increased concentration of GHGs in the atmosphere and global temperatures has led to both legislation and regulations requiring reductions in GHG emissions.

Regulatory agencies, such as the Bay Area Air Quality Management District (BAAQMD), have made a clear distinction between biogenic CO_2 emissions, which result from the decay of living cells, and man-made CO_2 emissions, which occur when fossil fuels are burned. The BAAQMD has excluded CO_2 emissions from wastewater treatment processes from its fee rule and from its California Environmental Quality Act (CEQA) significance thresholds because these emissions are part of the short-term carbon cycle. The CO_2 emissions that result from the combustion of biologically derived digester gas are also reported separately from anthropogenic emissions in the annual inventories for the United States (U.S.) Environmental Protection Agency (EPA) and the California Air Resources Board (CARB).

[1] The United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines for national inventories were updated in 2006, but continue to require the use of GWPs from the IPCC Second Assessment Report (SAR) (IPCC 1996), see: http://unfccc.int/resource/docs/2006/sbsta/eng/09.pdf

It is important to note that climate change is a global impact, particularly as it relates to man-made GHG emissions. It is the cumulative effect of all GHG sources across the planet that can cause any appreciable impact to earth's climate. An individual project, by itself, would not generate enough GHG emissions to significantly influence global climate change (AEP 2007). As a consequence, there is no federal threshold for determining a significant impact from GHG emissions. The state of California has not adopted a significance threshold, but does require project proponents to quantify and disclose GHG emissions as part of CEQA. The South Coast Air Quality Management District (SCAQMD), in turn, has adopted significance thresholds for purposes of CEQA.

In this environmental impact report/environmental impact statement (EIR/EIS), the Sanitation Districts of Los Angeles County (Sanitation Districts) have quantified the GHG emissions from both the program and project, and have compared these emissions to adopted significance thresholds to determine if there are any significant impacts.

It should also be noted that the Sanitation Districts have contributed to GHG reductions by pioneering and implementing green technologies that recover energy from waste and provide treated wastewater for beneficial reuse. These programs displace fossil fuels that would otherwise be burned to produce power or import fresh water from other regions. These technological achievements are an outcome of the Sanitation Districts' mission to protect public health and environment through cost-effective wastewater and solid waste management, and in doing so convert waste into resources such as recycled water, renewable energy, and recycled materials. In 2010, the Sanitation Districts produced 800,000 megawatt-hours (MWh) of green power, offsetting 230,000 metric tons of CO_2e. This is enough renewable energy to power 120,000 homes. In fiscal year, 2009/2010, the Sanitation Districts beneficially reused 97,000 acre-feet of treated wastewater. The power avoided by not importing this amount of fresh water is about 260,000 MWh, offsetting 76,000 metric tons of CO_2e. While these green programs are not part of the Clearwater Program, they emphasize the Sanitation Districts' commitment to environmental stewardship.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have either no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this EIR/EIS. This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the GHG analysis for each program element is summarized by alternative in Table 9-1.

Table 9-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	-
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	-	C,O
Process Optimization	X	X	X	X	N/A	N/A	-	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 9-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	-	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	-	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	-	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	-	C,O
Biosolids Management	X	X	X	X	X	N/A	-	O
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project-level. See Table 9-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 9.5.5 for a discussion of the No-Project Alternative.
[b] See Section 9.5.6 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the GHG impact analysis for each project element is summarized by alternative in Table 9-2.

Table 9-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	-	C,O
Wilmington to SP Shelf (offshore)	X				N/A	N/A	-	C,O
Wilmington to PV Shelf (onshore)		X			N/A	N/A	-	C,O
Wilmington to PV Shelf (offshore)		X			N/A	N/A	-	C,O
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	-	C,O
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	-	C,O
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	-	C,O
Shaft Sites								
JWPCP East	X	X			N/A	N/A	-	C,O
JWPCP West			X	X	N/A	N/A	-	C,O

Table 9-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
TraPac	X	X			N/A	N/A	-	C,O
LAXT	X	X			N/A	N/A	-	C,O
Southwest Marine	X	X			N/A	N/A	-	C,O
Angels Gate			X		N/A	N/A	-	C,O
Royal Palms				X	N/A	N/A	-	C,O
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	-	C,O
PV Shelf		X	X		N/A	N/A	-	C,O
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	-	C,O

[a] See Section 9.5.5 for a discussion of the No-Project Alternative.
[b] See Section 9.5.6 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

9.2 Environmental Setting

9.2.1 Regional Setting

GHGs differ from criteria pollutants in that GHG emissions do not cause direct adverse human health effects. Rather, the direct environmental effect of GHG emissions is the increase in global temperatures or change in global climate. This, in turn, has numerous indirect effects on the environment and humans.

Some climate changes that have already been observed include shrinking glaciers, thawing permafrost, later freezing and earlier break-up of ice on rivers and lakes, a lengthened growing season, shifts in plant and animal ranges, and earlier flowering of trees (IPCC 2001). Longer-term environmental impacts of global warming may include a rise in sea level, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems with potential losses of species, and a significant reduction in the winter snow pack. Some estimates show a 30 to 90 percent reduction in snow pack in the Sierra Nevada mountain range. Current data suggest that in the next 25 years, in every season of the year, the state of California could experience unprecedented heat, longer and more extreme heat waves, greater intensity and frequency of heat waves, and longer dry periods. More specifically, the California Climate Change Center (Luers et al. 2006) predicts that California could witness the following events:

- Temperature rises between 3 to 10.5ºF
- 6 to 20 inches or more of sea level rise
- 2 to 4 times as many heat-wave days in major urban centers
- 2 to 6 times as many heat-related deaths in major urban centers
- 1 to 1.5 times more critically dry years
- 10 to 55 percent increase in the risk of wildfires

9.2.2 Program Setting

The Clearwater Program is discussed in Chapter 1. Certain program elements would impact the following wastewater treatment plants within the Joint Outfall System (JOS):

- San Jose Creek Water Reclamation Plant (SJCWRP)
- Pomona Water Reclamation Plant (POWRP)
- Los Coyotes Water Reclamation Plant (LCWRP)
- Long Beach Water Reclamation Plant (LBWRP)
- Joint Water Pollution Control Plant (JWPCP)

These facilities are described in Chapters 2 and 3. GHG emissions would be generated at these facilities primarily as a result of the combustion of fossil fuels in stationary equipment used to support wastewater treatment plant operations (water reclamation plants [WRPs] only), nitrification/denitrification processes (SJCWRP only), the combustion of digester gas for energy recovery and the production of steam (JWPCP only), the truck hauling of biosolids to remote sites for beneficial uses (JWPCP only), and indirectly[2] from electricity consumption.

9.2.3 Project Setting

The existing ocean discharge system does not contribute to GHG emissions because it is a conveyance system that utilizes primarily gravity flow.

9.3 Regulatory Setting

9.3.1 Federal

Federal regulations requiring reporting or reduction of GHG emissions are in various stages of development or implementation. In the 2007 U.S. Supreme Court case *Massachusetts v. EPA*, the court ruled that CO_2 and other GHGs are air pollutants that could be regulated by the EPA. Subsequent to the court case, the EPA Administrator signed a document making two significant findings with regard to GHG emissions, thereby allowing the EPA to proceed with rulemaking. The ultimate implementation of the federal GHG regulations may be preempted by congressional action.

The President's Council on Environmental Quality (CEQ) issued draft guidance on how GHG emissions should be handled under the National Environmental Policy Act (NEPA). Based on this guidance, federal agencies such as the U.S. Army Corps of Engineers (Corps) will not make an impact determination under NEPA for GHG emissions but, instead, use a reference point above which they are required to consider any additional environmental review. Consequently, the anticipated emissions for each project alternative would be disclosed relative to the NEPA baseline without expressing a judgment as to their significance.

[2] Direct emissions are those emitted from sources owned or controlled by a specific entity or action. For example, fuel combustion during construction activities results in direct emissions. Indirect emissions are those that result from a participant's actions but are produced from sources owned or controlled by another entity, including electricity produced at a remote power plant.

As indicated in Chapter 3, the program-level elements of the Clearwater Program are not part of the NEPA scope of analysis, but their impacts would be disclosed in the EIR/EIS. The project-level elements are within the NEPA scope of analysis.

The following summarizes recent federal regulations and policies related to climate change and GHGs.

9.3.1.1 Endangerment and Cause or Contribute Findings for Greenhouse Gases Under the Clean Air Act

On December 7, 2009, the EPA Administrator signed two significant findings regarding GHGs under Section 202(a) of the Clean Air Act (CAA):

- Endangerment Finding. The EPA found that the current and projected concentrations of the six key GHGs in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding. The EPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

This action provided the legal basis for the EPA to proceed with GHG rulemaking.

9.3.1.2 U.S. Environmental Protection Agency Tailoring Rule for Greenhouse Gas Emissions

On May 13, 2010, the EPA issued the "tailoring" rule for GHG emissions, which targets the largest GHG emitters. Starting January 2, 2011, the largest GHG emitters will be subject to the CAA construction and operating permit requirements. Facilities already subject to New Source Review permits for other pollutants will be required to include GHGs in their permits if they increase their emissions by 75,000 tons of CO_2e per year. On July 1, 2011, the EPA will extend the requirements to new construction projects that emit at least 100,000 tons of GHGs and existing facilities that increase their emissions by 75,000 tons per year, even if they do not exceed thresholds for pollutants. GHG emissions will be accounted for in Title V operating permits if the source emits 100,000 tons of CO_2e per year or more.

The EPA GHG guidance for this rule explains that new and modified facilities will be required to implement Best Available Control Technology (BACT) to control GHGs. There is still considerable uncertainty as to what controls must be installed. A BACT is a case-by-case analysis that considers technological feasibility, environmental effectiveness, and cost effectiveness of the control technology at the particular facility.

The Clearwater Program does not create a new large stationary GHG emissions source, so it will not be subject to the Tailoring Rule's BACT review or Title V permitting.

9.3.1.3 U.S. Environmental Protection Agency and National Highway Traffic Safety Administration National Program to Cut Greenhouse Gas Emissions and Improve Fuel Economy for Cars and Trucks

On April 1, 2010, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a new national program to reduce GHG emissions and improve fuel economy for new cars and trucks sold in the U.S. The EPA and NHTSA finalized a joint rule that established a national program consisting of new standards for model years 2012 through 2016 light-duty

vehicles that would reduce GHG emissions and improve fuel economy. The EPA finalized the national GHG emissions standards under the CAA, and the NHTSA finalized the Corporate Average Fuel Economy standards under the Energy Policy and Conservation Act.

9.3.1.4 U.S. Environmental Protection Agency and National Highway Traffic Safety Administration National Program to Cut Greenhouse Gas Emissions and Improve Fuel Economy for Medium and Heavy Duty Engines and Vehicles

On August 9, 2011, the EPA and the NHTSA announced a new national program to reduce GHG emissions and improve fuel economy for new medium and heavy duty engines and vehicles sold in the U.S. The EPA and NHTSA finalized a joint rule that established a national program consisting of new standards for engines with model years 2014 through 2018. The agencies estimate that the combined standards will reduce CO_2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of vehicles built for the 2014 to 2018 model years.

9.3.1.5 Council on Environmental Quality Draft Guidance on Consideration of Effects of Climate Change and Greenhouse Gas Emissions Under NEPA

In February 2010, the CEQ released a guidance memorandum on the ways in which federal agencies can improve their evaluation and disclosure of GHG emissions under NEPA for proposed federal actions. The guidance identified a reference point of 25,000 metric tons per year (mty) for direct CO_2e GHG emissions as an indicator that further NEPA review may be warranted. This reference point, however, is not intended to be used as a threshold for determining a significant impact or effect on the environment due to GHG emissions. The guidance also does not propose a reference point for indirect GHG emissions.

9.3.2 State

The U.S. Supreme Court's ruling in the 2007 case *Massachusetts v. EPA* held that the EPA has authority to regulate GHG emissions from new vehicles under the CAA. In 2007, State Attorney General Jerry Brown indicated that the ruling "made it clear" that California has a right to regulate GHGs. Consequently, GHG emissions can be regulated in the state of California and the associated emission reduction plans can be enforced through existing air quality laws.

9.3.2.1 Office of Planning and Research CEQA Guidelines on Greenhouse Gases

The Governor's Office of Planning and Research (OPR) developed amendments to the State CEQA Guidelines for addressing GHG emissions. These amendments became effective on March 18, 2010, when the Office of Administrative Law approved them. OPR did not define or set a CEQA threshold in which GHG emissions would be considered significant. Instead the lead agency would assess the significance of impacts from GHG emissions on the environment by considering a threshold that applies to the project and evaluate feasible mitigation measures.

In the South Coast Air Basin (SCAB), the SCAQMD has set a significance threshold for purposes of CEQA. The SCAQMD threshold will be used for evaluating the program and project elements of the Clearwater Program.

9.3.2.2 May 2008 Attorney General Greenhouse Gas CEQA Guidance Memo

The California State Attorney General's office released a CEQA guidance memo related to GHG analysis and mitigation measures (California State Attorney General's Office 2008). The memo provides examples of mitigation measures that could be used in a diverse range of projects. The measures identified in the memo have been considered in this EIR/EIS.

9.3.2.3 AB 32 – California Global Warming Solutions Act of 2006

AB 32 sets a statewide goal to reduce GHG emissions to 1990 levels by 2020. This act instructs CARB to adopt regulations that reduce emissions from significant sources of GHGs, and establish a mandatory GHG reporting and verification program by January 1, 2008.

Wastewater processes are not considered a significant GHG emissions source. Additionally wastewater-related CO_2 emissions are biogenic in nature, not man-made. Consequently, wastewater treatment operations with anthropogenic emissions below 25,000 mty of CO_2e are categorically excluded in the state's emerging GHG cap and trade regulation, and are not included in the AB 32 Scoping Plan's Early Reduction Measures. Additionally, biogenic CO_2 emissions from wastewater treatment operations are not reported as direct, anthropogenic emissions under the state's Mandatory Reporting Rule.

9.3.2.4 AB 1493 – Vehicular Emissions of Greenhouse Gases

AB 1493 (Pavley), enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB apply to 2009 and later model year vehicles. CARB estimates that the regulation will reduce climate change emissions from light duty passenger vehicle fleet by 18 percent in 2020 and 27 percent in 2030 (CARB 2004).

9.3.2.5 Low Carbon Fuel Standard

In January 2007, by Executive Order, Governor Arnold Schwarzenegger established a low carbon fuel standard (LCFS) for transportation fuels sold in the state of California, where the initial goal is to reduce the carbon intensity of California's passenger vehicle fuels by at least 10 percent by 2020. In December 2011, the U.S. District Court issued an injunction halting enforcement of the rule until the litigation reaches a conclusion. The LCFS standard was not quantified in the analysis. Landfill gas, which is similar in nature to digester gas, qualifies as a low carbon fuel because of its very small carbon footprint.

9.3.2.6 Renewable Portfolio Standard Senate Bills (SB) 1078 and 107, and Executive Order S-14-08

Senate Bills 1078/107 and Executive Order S-14-08 - Renewable Portfolio Standard Senate Bills (SB) 1078 and 107, California's Renewable Portfolio Standard, obligates investor-owned utilities, energy service providers, and community choice aggregations to procure an additional 1 percent of retail sales per year from eligible renewable sources until 20 percent is reached, no later than 2010. The California Public Utilities Commission and California Energy Commission are jointly responsible for implementing the program. Executive Order S-14-08 sets forth a longer range target of procuring 33 percent of retail sales by 2020. Compliance of electrical utilities with Renewable Portfolio Standard would result in a lower emissions factor for California electricity in the future. Emission reductions that could result due to SB 1078 are not quantified in the analysis.

9.3.3 Regional

9.3.3.1 South Coast Air Quality Management District Interim CEQA Greenhouse Gas Thresholds

With no statewide CEQA significance threshold for GHG emissions, local public agencies within the SCAB requested guidance on how to determine if GHG impacts from a proposed project are significant from the SCAQMD. In December 2008, in response to these requests, the SCAQMD adopted a resolution approving the Interim CEQA GHG Significance Threshold for Stationary Sources, Rules, and Plans, for situations in which the SCAQMD is the lead agency.

While the threshold was approved specifically for CEQA documents in which the SCAQMD is the lead agency, other lead agencies in the SCAB have used this threshold for determining the significance of GHG impacts of proposed projects. The Sanitation Districts will use the SCAQMD interim CEQA GHG significance threshold for this environmental impact report (EIR). As specified in the SCAQMD GHG CEQA guidance document, construction emissions are amortized over the life of the project, defined as 30 years.

SCAQMD adopted a tiered approach for determining the significance of GHG impacts for purposes of CEQA:

Tier 1. Consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA. If the project does not qualify for an exemption, then it would move to the next tier. This tier does not apply to the Clearwater Program since an EIR/EIS has been prepared.

Tier 2. Consists of determining whether or not the project is consistent with a GHG reduction plan that may be part of a local general plan. If the project is consistent with the qualifying local GHG reduction plan, it is not significant for GHG emissions. In order for a GHG reduction plan to qualify, it must, at minimum, comply with AB 32 reduction goals, include emission estimates agreed upon by either CARB or the SCAQMD, have been analyzed under CEQA, and have a certified final CEQA document. Additionally, the GHG reduction plan must include a GHG emissions inventory tracking mechanism, a process to monitor progress in achieving GHG emission reduction targets, and a commitment to remedy the excess emissions if GHG reduction goals are not met (enforcement). If the project is not consistent with a qualifying local GHG reduction plan, there is no approved plan, or the GHG reduction plan does not include all the components described above, the project would move to the next tier. At this time, there are no qualifying local GHG reduction or general plans applicable to this EIR/EIS.

Tier 3. Establishes a stationary source screening significance threshold level of 10,000 mty. For the purposes of determining whether or not GHG emissions from affected projects are significant, SCAQMD specified that project emissions must include direct, indirect, and, to the extent information is available, life cycle emissions during construction and operation. Construction emissions would be amortized over the life of the project (defined as 30 years) added to the operational emissions, and compared to the applicable interim GHG significance threshold tier. If the project exceeds the GHG screening significance threshold and GHG emissions cannot be mitigated to less than the screening level, the project would move to the next tier. This will be used as the GHG significance threshold in this EIR/EIS.

Tier 4 (proposed but not approved). Consists of a decision tree approach that would allow the lead agency to choose one of three compliance options based on performance standards. The SCAQMD excluded Tier 4 for consideration by their board due to policy and legal concerns.

Tier 5. Implements offsite mitigation (GHG reduction projects) to reduce GHG emission impacts to less than the proposed screening level. If the project proponent is unable to implement offsite GHG reduction mitigation measures to reduce GHG emission impacts to less than the screening level, the GHG emissions from the project would be considered significant.

The SCAQMD expects Tier 3 to be the primary tier by which it will determine significance for projects where it is the lead agency.

9.3.3.2 South Coast Air Quality Management District 2007 Air Quality Management Plan

Every 3 years, the SCAQMD prepares an overall plan for bringing the SCAB into attainment with state and national ambient air quality standards for criteria pollutants. The SCAQMD Board adopted the most recent air quality management plan (AQMP) in June 2007.

The purpose of the AQMP is to reduce criteria pollutants, not GHGs. However, the AQMP considers GHG reductions to also result in a concurrent reduction of criteria pollutants associated with fossil fuel combustion. Consequently, the AQMP indicates that the reductions in criteria pollutant emission achieved through AB 32-related GHG programs will be applied toward the long-term criteria pollutant reduction targets for meeting the federal ozone standard.

The above SCAQMD strategy is reflected in long-term control measure No. 4 (LTM-04) of the 2007 AQMP, where the SCAQMD states it will apply GHG reductions achieved through state-implemented AB 32 programs toward the “concurrent” reduction in criteria pollutants. In Table 7-3 of the 2007 AQMP, the SCAQMD has assigned CARB as the lead implementing agency for LTM-04.

The 2007 AQMP also incorporated long-term population projections from the Southern California Association of Governments (SCAG) and the estimated emissions associated with such a population increase from all stationary, mobile, and area sources. The wastewater sector is included in these projections.

9.3.4 Local

No local agreements or regulations for GHG are in place at this time.

9.4 Environmental Impacts and Mitigation Measures

9.4.1 Methodology and Assumptions

GHG emissions associated with construction and operational activities were quantified and compared to the thresholds of significance described in Section 9.4.2 to determine if their impacts are significant. Because GHGs are not geographically bound pollutants, it is appropriate to consider the total combined program and project GHG emissions in determining significance. For purposes of analysis, construction emissions from both the program- and project-level elements were calculated based on the specific methodologies presented in Sections 9.4.1.1 and 9.4.1.2 and amortized over 30 years (SCAQMD 2008). In determining whether or not GHG emissions are significant, this analysis utilized SCAQMD’s Tier 3 approach, which establishes a stationary source screening significance threshold level of 10,000 mty.

GHG emissions for project elements would derive from construction activities only because the project operation, which consists of the primarily passive flow of treated wastewater effluent to the existing or new ocean outfalls, would not generate air emissions. For program elements, the annual GHG emissions from operations were calculated based on the methodology in Section 9.4.1.1 and were added to the amortized program- and project-level construction values to obtain the total GHG emissions. The total unmitigated and mitigated GHG emissions were compared to the appropriate threshold of significance listed in Section 9.4.2.

It should be noted that amortizing over 30 years yields a conservative estimate with regard to GHG emissions because construction and operation activities could occur over a period that is longer than 30 years. Therefore, amortizing over the actual life would result in lower GHG emissions than those presented in this analysis.

The following general methodologies and assumptions were used in the GHG analysis:

- The emission estimates presented in this document were calculated using the latest available data, conservative assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available for this study.
- The numerical results presented in the tables of this report were rounded, often to the nearest whole number, for presentation purposes. As a result, the sum of tabular data in the tables could differ slightly from the reported totals.
- Mitigation measures were prescribed for those proposed activities that would exceed a significance criterion. Sources for mitigation measures included the California Air Pollution Controls Officers Association, the EPA, the SCAQMD, and the Office of the Attorney General. Only those mitigation measures that would result in quantifiable reductions were calculated. Potential emission reductions from other mitigation measures that are not readily quantifiable were prescribed but not quantified.
- GHG emissions are presented in metric tons of CO_2e.
- Biogenic CO_2 emissions are excluded.
- CH_4 and N_2O emissions were converted into CO_2e using their respective GWP (21 for CH_4 and 310 for N_2O) and presented in metric tons of CO_2e.
- Specific assumptions used in the analysis and calculations are presented in Appendix 9-A.

9.4.1.1 Methodology for Determining Program-Related Construction and Operational Emissions

The GHG impact analysis considers construction and operational impacts associated with the program. Construction of each program element would involve, but would not be limited to, the use of off road construction equipment, on-road employee vehicles, and heavy-duty haul trucks. These sources would generate GHG emissions in the form of exhaust from fuel combustion. Worker commute vehicles would also generate GHG emissions from vehicle exhaust. Construction emissions for each program element were quantified based on information provided by the Sanitation Districts and information found in similar construction projects. Applicable SCAQMD, CARB, and federal rules and/or emission factors were used to determine emission levels for engine exhausts and combustion equipment.

Operation of certain program elements would result in GHG emissions: N_2O emissions from the nitrification/denitrification process at the SJCWRP, indirect emissions from electrical consumption at the

WRPs, CH_4 and N_2O emissions from the combustion of digester gas, exhaust from biosolids hauling trucks from the JWPCP, and exhaust from the emergency generator at the SJCWRP. Operational activity data used to quantify GHG emissions associated with program-level operational activities was based on information provided by the Sanitation Districts.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Construction associated with expansion of the SJCWRP would include site preparation and treatment module installation. The SJCWRP expansion would likely occur between 2035 and 2040. Construction is estimated to take approximately 24 to 36 months to complete (see Chapter 3). Emissions associated with site preparation and treatment module installation were calculated using the URBEMIS2007 emissions model (URBEMIS 2007), which is a model recognized by the SCAQMD for estimating air emissions for a wide variety of land use projects. It was assumed that site preparation would take 3 months to complete, and tank installation would take 21 months to complete. Emissions would result from off-road construction equipment and from on-road travel associated with construction workers, material deliveries, and hauling trucks. Daily CO_2 emissions as calculated by URBEMIS were multiplied by the number of days to complete each phase. Total CO_2 emissions were taken as the sum of total CO_2 emissions from both phases of plant expansion. URBEMIS does not calculate CH_4 and N_2O emissions from construction activities. Therefore, CH_4 and N_2O emissions from construction activities associated with on-road and off-road sources were calculated based on the ratio of CH_4 and N_2O emission factors to the CO_2 emission factor found in the Climate Registry General Reporting Protocol (CR GRP) (CR 2011). Construction emissions were amortized over 30 years per SCAQMD's GHG CEQA significance thresholds methodology (SCAQMD 2008).

Operation

Electricity

Expansion of the SJCWRP would result in increased electrical consumption from the existing grid. Indirect GHG emissions associated with the purchase and use of electricity were calculated according to the methodology in the CR GRP (2011). The estimated increase in electricity consumption was provided by the Sanitation Districts. Emissions factors for CO_2, CH_4, and N_2O, in pounds per MWh, were obtained from the CR GRP for the year 2007 (CR 2011). Emission factors were assumed to remain constant through the planning horizon of 2050. Note that emission factors specified by the CR are conservative because the CR and this analysis do not quantify emission reductions due to compliance with SB 1078, as described in Section 9.3.2.6, which would result in a lower emissions factor for California electricity production in the future.

Generator

Expansion of the SJCWRP would necessitate the use of an additional emergency generator on site. GHG emissions from generator exhaust were calculated using EPA emission factor data for a Tier 4 (final) diesel generator set (DieselNet 2011). The emergency generator would not be required at the SJCWRP until after the plant is expanded, which is not likely until approximately 2035. As a conservative estimate, it is assumed that the generator will be tested 50 hours per year, which is the maximum allowed by SCAQMD Rule 1470. In actuality, generators such as this one are operated far less than 50 hours per year.

Nitrification/Denitrification

Expansion of the SJCWRP would result in increased nitrification and denitrification of wastewater, which serves to remove nitrogen prior to discharging treated effluent into receiving waters. GHG emissions

from nitrification and denitrification activities are in the form of N_2O, and emissions were calculated using the methodology presented in EPA GHG Inventory (EPA 2010) and population numbers projected by the Sanitation Districts based on SCAG estimates.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, Long Beach Water Reclamation Plant – Process Optimization

Construction

Process optimization would occur at four water reclamation plants: the SJCWRP, POWRP, LCWRP, and LBWRP. Construction emissions associated with two phases, site preparation and process optimization, were estimated using the URBEMIS2007 model. GHG emissions would result from off-road construction equipment exhaust and from on-road vehicle exhaust associated with construction workers, material deliveries, and hauling trucks. It is estimated that construction activities associated with process optimization would begin in 2018 and take between 2 and 3 years to complete at the SJCWRP, and between 1 and 2 years to complete at the POWRP, LCWRP, and LBWRP sites. The number of days for each phase was based on a ratio of expected construction length (2 to 3 years at the SJCWRP, and 1 to 2 years at the other WRPs). Daily CO_2 emissions as calculated by URBEMIS2007 were multiplied by the number of days necessary to complete each phase. Total CO_2 emissions were taken as the sum of CO_2 emissions from each phase at each WRP. URBEMIS2007 does not calculate CH_4 and N_2O emissions from construction vehicle exhaust. Therefore, CH_4 and N_2O emissions from construction vehicle exhaust were calculated based on the ratio of CH_4 and N_2O emission factors to the CO_2 emission factor found in the CR GRP (CR 2011). Construction emissions were amortized over 30 years and added to operational emissions.

Operations

Process optimization would likely result in a decreased or unchanged electrical consumption, but other factors such as pump station configuration would need to be evaluated in detail in order to quantify any net reduction in electrical demand. Consequently, a slight increase in electrical consumption is assumed for the pumping of approximately 2 to 3 million gallons (MG) of wastewater into storage tanks at the POWRP, 3 to 5 MG at the LBWRP, 4 to 8 MG at the LCWRP, and 15 to 35 MG at the SJCWRP. It was assumed that additional electricity would be purchased from the existing electrical grid. Indirect GHG emissions associated with the purchase and use of electricity were calculated according to the methodology in the CR GRP (2011). The Sanitation Districts provided estimates for the anticipated increase in electrical consumption. The emission factors for CO_2, CH_4, and N_2O, in pounds per MWh, were obtained from the CR GRP (CR 2011) and were assumed to remain constant through the planning horizon of 2050.

Joint Water Pollution Control Plant – Solids Processing

Construction

Construction associated with solids processing would consist of installing six new digesters at the JWPCP. Construction would occur at any time between 2018 and 2050. Construction emissions associated with solids processing were estimated using the URBEMIS2007 model. Construction activities would include site excavation and digester tank installation. GHG emissions would result from off-road construction equipment exhaust and from on-road vehicles associated with construction workers, material deliveries, and hauling trucks. The type and numbers of construction equipment were estimated based on project specifics provided by the Sanitation Districts and information from SCAQMD's sample construction scenarios (SCAQMD 2005). Daily CO_2 emissions as calculated by URBEMIS2007 were multiplied by the number of days necessary to complete each phase. Total CO_2 emissions were taken as the sum of all CO_2 emissions from construction activities at the JWPCP. URBEMIS2007 does not

calculate CH_4 and N_2O emissions from construction vehicle activities (exhaust). Emissions of CH_4 and N_2O from construction vehicle exhaust were calculated based on the ratio of CH_4 and N_2O emission factors to the CO_2 emission factor found in the CR GRP (CR 2011). Construction emissions were amortized over 30 years and added to operational emissions.

Operation

Combustion of Digester Gas

Increased solids processing at the JWPCP would result in increased production of digester gas, which would be combusted in existing flares, existing boilers, or additional boilers. Due to the uncertainty of whether the existing flares, existing boilers, or future boilers would be used to combust the additional digester gas, the analysis assumed the worst-case emission factors representative of flare and boiler technologies. The projected increase in digester gas was linearly based on the expected increase in solids handling at the JWPCP by 2050. As previously indicated, the CO_2 emissions associated with the combustion of the biologically derived digester gas are not counted. CH_4 and N_2O emissions were calculated based on site-specific source test emission factors provided by the Sanitation Districts and multiplied by the projected increase in digester gas.

Joint Water Pollution Control Plant – Biosolids Management

Construction

No construction elements are associated with biosolids management as defined in this analysis.

Operations

The increase in solids processing at the JWPCP would result in additional truck trips to disposal locations within the region (see Chapter 3, Table 3-7). Emissions associated with biosolids hauling in 2008 were used to define the CEQA baseline. It is estimated that there would be an additional 20 truckloads per day over the baseline. In 2008, biosolids were hauled to various disposal locations, both within the SCAB and other nearby air basins (see Chapter 2, Table 2-6). In the future, biosolids would be hauled to the same or comparable locations with the exception of the Puente Hills Landfill and Westlake Farms (see Chapter 3, Table 3-7). Puente Hills Landfill, located approximately 30 miles east of the JWPCP, will close in 2013. The Westlake Farms Composting Facility, located approximately 200 miles from the JWPCP, is scheduled to be operational in 2013.

Annual GHG emissions from biosolids hauling for analysis years 2020, 2030, and 2040 were calculated by multiplying haul truck vehicle miles traveled (VMT) by GHG emission factors. VMT was calculated as the product of the average distance to a biosolids management location and the number of truck trips per year (based on 55 truckloads per day at baseline and 75 truckloads per day by 2050). The average distance was determined by weighting the distance to each location by the amount of biosolids transported to that location. The gradual increase of biosolids generated at the facility would result in a corresponding gradual increase of haul truck trips.

The CO_2e emissions from on-road, heavy-duty haul trucks were calculated using emission factors generated by the EMFAC2007 model. The on-road mobile source emission factor was representative for a truck fleet in the Los Angeles County area (CARB 2006a). Emissions of CH_4 and N_2O from on-road, heavy-duty diesel trucks were calculated using emission factors found in the CR GRP (2011).

9.4.1.2 Methodology for Determining Project-Related Construction Emissions

The GHG impact analysis considers construction impacts associated with the project, as discussed in this section. During operations, the project would consist of a new or modified ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, which would not generate GHGs. Therefore, only construction emissions are calculated in the project assessment. Construction activities for the project would involve, but not be limited to, the use of off-road construction equipment, cranes, on-road trucks, tugboats, barges, and heavy duty haul trucks. Petroleum fuel combustion associated with these sources would result in GHG emissions.

Construction emissions were quantified by using equipment usage and construction scheduling data provided by the Sanitation Districts. Emission factors from CARB's OFFROAD2007, EMFAC2007, and CR GRP were identified for each type of equipment, heavy-duty trucks, and marine vessels. Emission factors for the tunnel locomotive were obtained through a manufacturer.

GHG emissions were first calculated for individual construction activities (e.g., shaft construction, offshore and onshore tunneling, riser and diffuser construction, etc.). Annual emissions were determined by summing emissions from overlapping construction activities by year as indicated in the construction schedule (available in Appendix 9-A). Finally, following the SCAQMD's methodology for assessing GHG impacts, the total construction emissions were amortized over the life of the project, defined to be 30 years (SCAQMD 2008). It should be noted that the life of the project is expected to be longer than 30 years and amortizing over the actual life of the project would result in lower GHG emissions. As such, amortizing over 30 years yields a conservative estimate with regard to GHG emissions.

Harbor Craft

Tugboats would be used to guide barges during construction of the riser and diffuser as well as during the rehabilitation of the existing ocean outfalls. The CARB methodology for quantifying emissions from harbor craft (CARB 2007) was used in this analysis to quantify GHG emissions. Engine zero-hour emission factors for commercial harbor craft, engine useful life, and engine deterioration factors for typical harbor craft associated with project construction (CARB 2007) were used in the analysis along with the engine horsepower and activity schedule provided by the Sanitation Districts.

Off-Road Construction Equipment for All Project Elements

Emissions of CO_2, CH_4, and N_2O from diesel-powered construction equipment for both land-based equipment (e.g., cranes, loaders, etc.) and marine equipment (e.g., barge mounted equipment) were calculated using emission factors derived from the CARB OFFROAD 2007 Emissions Model (CARB 2006b). Using the Los Angeles County fleet information (see Appendix 5-B), the OFFROAD 2007 model was run for each construction year. Emission factors were calculated based on each type of equipment, horsepower rating of the equipment, and the corresponding equipment activity levels. Emissions of CO_2, CH_4, and N_2O from electrically powered construction equipment were calculated using emission factors found in the CR GRP (2011). Electric barge-mounted equipment was not considered feasible given the distance from shore.

On-Road Trucks Used During Construction for All Project Elements

Emissions of CO_2 from on-road, heavy-duty diesel trucks during construction were calculated using emission factors generated by the EMFAC2007 model. The on-road mobile source emission factor was representative of a truck fleet in Los Angeles County (CARB 2006a). Emissions of CH_4 and N_2O from on-road, heavy-duty diesel trucks during construction were calculated using emission factors found in the CR GRP (2011).

Assumptions regarding on-road trucks during construction are as follows:

- Trucks hauling debris or fill materials would travel a distance of 60 miles per trip (URBEMIS 2007).
- Non-incidental onsite truck idling times would be limited to 5 minutes for all truck trips per CARB's Heavy Duty Vehicle Idling Emissions Reduction Program (CARB 2005a).

Worker Commute Trips During Construction Activities for All Project Elements

Emissions from worker trips during construction were calculated using the EMFAC 2007 and CR GRP emission factors in conjunction with construction worker information supplied by the Sanitation Districts. The Sanitation Districts' construction estimates provided detailed information about the number of construction workers and man-hours required for each project element. Details on worker commute trips, including trip length and number of trips, are presented in Appendix 9-A.

9.4.1.3 Baseline

CEQA Baseline

The CEQA baseline for the Clearwater Program is described in Section 1.7.4.1. CEQA Guidelines require that an EIR include a description of the physical environmental conditions in the vicinity of a proposed project that exist at the time the notice of preparation is published, which is presented in Section 2.2.4. These environmental conditions would constitute the baseline physical conditions by which the CEQA lead agency determines whether an impact is significant. For this EIR/EIS, the CEQA baseline for determining the significance of potential impacts of the Clearwater Program is 2008.

The CEQA baseline for construction activities is zero emissions because construction activities would result in new emissions. The CEQA baseline for the operational activities and alternatives includes GHG emissions generated at the SJCWRP and the JWPCP, indirect emissions from electricity purchases, as well as emissions currently generated as a result of hauling of biosolids from the JWPCP site to various biosolids management locations. Emissions identified in the CEQA baseline constitute those emissions sources that would be affected by the program elements. For example, electricity purchases associated with plant operations at the WRPs other than the SJCWRP would not increase because the program would not increase plant capacity at the LBWRP, LCWRP, or POWRP. However, because it is conservatively assumed that there would be a slight increase in electrical consumption at the WRPs due to a new pump station for the flow equalization tanks under the program, the indirect emissions associated with flow equalization were included in the CEQA baseline. The average daily operational emissions associated with the CEQA baseline are presented in Table 9-3. Note that because of the substantial amount of daily truck trips and travel distances, biosolids hauling constitutes the majority of the baseline emissions.

Table 9-3. Operational Emissions – CEQA Baseline

Program/Project Element	CO_2e Emissions (metric tons per year)
Program-Specific Elements[a]	
SJCWRP Nitrification/Denitrification	2,374
WRPs Purchased Electricity	612
JWPCP Combustion of Digester Gas[b]	95
JWPCP Biosolids Hauling	8,897
Total	11,978
Project-Specific Elements[c]	0

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
[a] Emissions from electricity consumption are the emissions that result from electricity purchased from the grid only. At the SJCWRP, 4.8 of the 5.4 MW were produced from landfill gas at the Puente Hills Landfill and are not included in the analysis.
[b] Biogenic CO_2e emissions are excluded for the reasons stated previously.
[c] Project operations are not quantified in the analysis because they are primarily passive activities that would not generate GHG emissions.
Sources: EPA 2010; CARB 2006a

NEPA No-Federal-Action Baseline

The NEPA baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline is not bound to a "no growth" scenario. The NEPA baseline is the No-Federal-Action Alternative (Alternative 6), which is defined as activities that would occur absent federal action. Absent federal action, only the program elements (including SJCWRP plant expansion, WRP process optimization, JWPCP solids processing, and JWPCP biosolids management) would occur. Therefore, the NEPA baseline would be equivalent to emissions under the program elements. Additionally, because the NEPA baseline reflects operational program elements, the NEPA baseline would vary in each analysis year as program elements are implemented. The NEPA baseline for construction and operation is presented in Table 9-4.

Table 9-4. NEPA Baseline CO_2e Emissions (metric tons per year)

	2020	2030	2040	2050
Construction[a]	274	274	274	274
Operations				
SJCWRP Nitrification/ Denitrification	2,545	2,689	2,832	2,975
SJCWRP Generator	N/A	N/A	40	40
WRPs Purchased Electricity	849	1,048	1,246	1,444
JWPCP Combustion of Digester Gas	101	106	112	117
JWPCP Biosolids Hauling	13,576	14,628	15,738	16,805
Total	17,346	18,745	20,240	21,654

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
Construction and operational emissions are calculated per emissions methodology in Section 9.4.1.1.
[a] Construction CO_2e is the amortized value of total mitigated construction GHGs (8,216 metric tons) averaged over 30 years.
N/A = not applicable

9.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for GHG emissions:

GHG-1. Generates GHG emissions that would have a significant impact on the environment.

GHG-2. Conflicts with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on GHGs before mitigation. Table 9-5 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 9-5 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 9-5. Thresholds Evaluated

		Threshold	
	Alt.	**GHG-1**	**GHG-2**
Program Element			
SJCWRP Plant Expansion	1–5	X	X
SJCWRP Process Optimization	1–4	X	X
POWRP Process Optimization	1–4	X	X
LCWRP Process Optimization	1–4	X	X
LBWRP Process Optimization	1–4	X	X
JWPCP Solids Processing	1–5	X	X
JWPCP Biosolids Management	1–5	X	X
Project Element			
Wilmington to SP Shelf (onshore tunnel)[a]	1,2	X	X
Wilmington to SP Shelf (offshore tunnel)	1	X	X
Wilmington to PV Shelf (onshore tunnel)[a]	1,2	X	X
Wilmington to PV Shelf (offshore tunnel)	2	X	X
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3	X	X
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3	X	X
Figueroa/Western to Royal Palms (onshore tunnel)	4	X	X
JWPCP East Shaft Site	1,2	X	X
TraPac Shaft Site	1,2	X	X
LAXT Shaft Site	1,2	X	X
Southwest Marine Shaft Site	1,2	X	X
JWPCP West Shaft Site	3,4	X	X
Angels Gate Shaft Site	3	X	X
Royal Palms Shaft Site	4	X	X
SP Shelf Riser/Diffuser Area	1	X	X
PV Shelf Riser/Diffuser Area	2,3	X	X
Existing Ocean Outfalls Riser/Diffuser Area	1–4	X	X

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
Alt. = alternative

9.4.3 Alternative 1

9.4.3.1 Program and Project

Impact GHG-1 and Impact GHG-2 are evaluated on a regional level and analyzed for the combined emissions of construction and operation activities that would occur for the program and project.

Impact GHG-1. Would Alternative 1 generate GHG emissions that would have a significant impact on the environment?

Construction and Operation

CEQA Analysis

Construction and operation emissions for Alternative 1 are shown in Table 9-6.

Table 9-6. Alternative 1 Under CEQA Construction and Operation Annual Greenhouse Gas Emissions Without Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Program Construction	
2018–2019	POWRP Process Optimization	1,161
2018–2019	LBWRP Process Optimization	1,476
2018–2019	LCWRP Process Optimization	1,487
2018–2020	SJCWRP Process Optimization	2,255
2035–2040	SJCWRP Plant Expansion	417
2018–2050	JWPCP Solids Processing	1,421
Total Program Construction		8,216
30-Year Amortized Program Construction Emissions (mty)		274
	Project Construction	
2015–2015	JWPCP East Shaft Site	5,825
2016–2018	Onshore Tunnel Alignment (TBM1)[a]	59,284
2016–2017	TraPac Shaft Site	5,828
2015–2016	LAXT Shaft Site	7,281
2016–2022	Offshore Tunnel Alignment (TBM2)[a]	242,419
2015–2016	Southwest Marine Shaft Site	5,841
2019–2021	SP Shelf Riser	3,166
2021–2022	SP Shelf Diffuser	4,430
2021–2022	Existing Ocean Outfalls	503
Total Project Construction		334,576
30-Year Amortized Project Construction Emissions (mty)		11,153
	Program Operation	
2050	SJCWRP Nitrification/Denitrification (mty)	2,975
2050	SJCWRP Generator (mty)	40
2050	WRPs Purchased Electricity (mty)	1,444
2050	JWPCP Combustion of Digester Gas (mty)	117

Table 9-6 (Continued)

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
2050	JWPCP Biosolids Hauling (mty)	16,805
Total Program Operation Annual Emissions		21,380
Total Alternative 1 Annual Emissions		32,806
CEQA Baseline[b] (mty)		11,978
CEQA Increment (mty)		20,829
CEQA Threshold (mty)		10,000
CEQA Significant?		Yes

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
[a] Emissions are from tunnel locomotive.
[b] The CEQA baseline is zero for new construction. The CEQA baseline represents baseline operations.
TBM = tunnel boring machine
Sources: CARB 2006a, 2006b, 2005a; 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

As shown in Table 9-6, construction of Alternative 1 (Program) would occur between 2018 and 2050. Construction activities would generate GHG emissions from direct emission sources, including mobile and stationary construction equipment exhaust, delivery and haul truck exhaust, and employee vehicle exhaust, as discussed in Section 9.4.1.1.

Construction of Alternative 1 (Project) would occur over a 96-month construction period, starting in the first quarter of 2015 and concluding in the fourth quarter of 2022. Construction activities would generate GHG emissions from the tunnel locomotive, mobile and stationary construction equipment exhaust and electricity consumption, tugboat and small boat exhaust, delivery and haul truck exhaust, and employee vehicle exhaust.

Since construction equipment and fleet vehicles would likely be more fuel efficient over time, if construction were delayed, emissions would be less than those quantified in this analysis. The construction equipment fleet mix and duration for each construction stage is detailed in the construction spreadsheets provided in Appendix 9-A.

Operation of Alternative 1 (Program) has the potential to create GHG impacts from various sources: N_2O and CH_4 emissions from increased combustion of digester gas, N_2O emissions from increased nitrification/denitrification at the SJCWRP, increased indirect electrical consumption at the WRPs, additional biosolids truck hauling from the JWPCP, and the additional emergency generator at the SJCWRP. Alternative 1 (Program) operational emissions at full buildout are presented in Table 9-6. Operation of Alternative 1 (Project) would consist of a new ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, which would not generate GHGs. Therefore, project operations would not contribute to GHG emissions.

As shown in Table 9-6, impacts would be significant for GHG emissions for Alternative 1.

NEPA Analysis

In accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. The NEPA baseline is equivalent to all activities that would occur absent federal action and as such is equivalent to emissions under the program elements. Therefore, subtracting the NEPA baseline from total Alternative 1 emissions would result in a NEPA increment that would always be equivalent to project construction emissions, as shown in Table 9-7. Because the project construction emissions are

represented by a 30-year constant average, the NEPA increment would always be constant for each analysis year.

Table 9-7. Alternative 1 Under NEPA Construction Annual Greenhouse Gas Emissions Without Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Project Construction	
2015–2015	JWPCP East Shaft Site	5,825
2016–2018	Onshore Tunnel Alignment (TBM1)[a]	59,284
2016–2017	TraPac Shaft Site	5,828
2015–2016	LAXT Shaft Site	7,281
2016–2022	Offshore Tunnel Alignment (TBM2)[a]	242,419
2015–2016	Southwest Marine Shaft Site	5,841
2019–2021	SP Shelf Riser	3,166
2021–2022	SP Shelf Diffuser	4,430
2021–2022	Existing Ocean Outfalls	503
Total Project Construction		334,576
30-Year Amortized Project Construction Emissions (mty)		11,153
Total Alternative 1 Annual Emissions		32,806
NEPA Baseline (mty)		21,654
NEPA Increment (mty)		11,153
NEPA Reference Point[a] (mty)		25,000
NEPA Significant?		N/A

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions are from tunnel locomotive.

[b] The CEQ reference point of 25,000 mty CO_2e (CEQ 2010) used in this analysis serves as an indicator that the federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. The reference point does not constitute an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but rather a minimum standard for reporting emissions under the CAA. The NEPA reference point includes direct emissions from the federal action. Per CEQ guidance, indirect emissions are not considered in the reference point.

TBM = tunnel boring machine

Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

In accordance with CEQ guidance, the Corps will not utilize the SCAQMD's interim CEQA significance threshold, propose a new GHG standard, or make a NEPA impact determination for GHG emissions estimated to occur from the project alternatives. Rather, in compliance with the NEPA implementing regulations and CEQ guidance, the anticipated emissions for each alternative are disclosed relative to the NEPA baseline without expressing a judgment as to their significance.

The CEQ reference point of 25,000 mty CO_2e (CEQ 2010) used in this analysis serves as an indicator that the federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. The reference point does not constitute an indicator of a level of GHG emissions that may significantly affect the quality of the human environment. The NEPA reference point includes direct emissions from the federal action. Per CEQ guidance, indirect emissions are not considered in the reference point.

GHG emissions under NEPA would be below the 25,000 mty CO_2e reference point per CEQ guidelines, as shown in Table 9-7. Because project operations would consist of the primarily passive flow of treated wastewater effluent, GHG emissions would not be generated during operations.

CEQA Impact Determination

The combination of emissions during construction and operation of Alternative 1 would generate GHG emissions that would have a significant impact on the environment. Impacts under CEQA would be significant before mitigation.

Mitigation

Some mitigation measures that reduce criteria pollutants may also reduce GHG emissions. Therefore, implementation of the following mitigation measures, including those defined in Chapter 5, may reduce GHG emissions. However, because GHG reductions from implementing these mitigation measures are difficult to quantify, no GHG reductions are assumed. It should also be noted that, although a particulate matter trap is part of certain air quality mitigation measures, it will not reduce CO_2 emissions.

Program

Mitigation Measure (MM) GHG-1a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap.

MM GHG-1b (same as MM AQ-2b). All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap.

MM GHG-1c (same as MM AQ-2d). Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for use during construction, provided that they will be available prior to commencing construction and proven reliable.

Project

In addition to implementation of MM GHG-1a, MM GHG-1b, and MM GHG-1c, the following mitigation measures would also be applied to Alternative 1 (Project).

MM GHG-1d (same as MM AQ-2f). Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles.

MM GHG-1e (same as MM AQ-2g). Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive.

MM GHG-1f. Use energy efficient lighting systems, such as LED technology, during construction, where feasible.

MM GHG-1g. Use lighter-colored pavement during construction, where feasible.

MM GHG-1h. Recycle construction debris to the maximum extent feasible.

Residual Impacts

GHG emissions following mitigation are presented in Table 9-8. Residual impacts would be significant and unavoidable.

Table 9-8. Alternative 1 Under CEQA Construction and Operation Annual Greenhouse Gas Emissions With Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Program Construction	
2018–2019	POWRP Process Optimization	1,161
2018–2019	LBWRP Process Optimization	1,476
2018–2019	LCWRP Process Optimization	1,487
2018–2020	SJCWRP Process Optimization	2,255
2035–2040	SJCWRP Plant Expansion	417
2018–2050	JWPCP Solids Processing	1,421
Total Program Construction		8,216
30-Year Amortized Program Construction Emissions (mty)		274
	Project Construction	
2015–2015	JWPCP East Shaft Site	5,823
2016–2018	Onshore Tunnel Alignment (TBM1)[a]	59,283
2016–2017	TraPac Shaft Site	5,825
2015–2016	LAXT Shaft Site	7,278
2016–2022	Offshore Tunnel Alignment (TBM2)[a]	242,414
2015–2016	Southwest Marine Shaft Site	5,839
2019–2021	SP Shelf Riser	3,166
2021–2022	SP Shelf Diffuser	4,427
2021–2022	Existing Ocean Outfalls	503
Total Project Construction		334,558
30-Year Amortized Project Construction Emissions (mty)		11,152
	Program Operation	
2050	SJCWRP Nitrification/Denitrification (mty)	2,975
2050	SJCWRP Generator (mty)	40
2050	WRPs Purchased Electricity (mty)	1,444
2050	JWPCP Combustion of Digester Gas (mty)	117
2050	JWPCP Biosolids Hauling (mty)	16,805
Total Program Operation Annual Emissions		21,380
Total Alternative 1 Annual Emissions		32,806
CEQA Baseline[b] (mty)		11,978
CEQA Increment (mty)		20,828
CEQA Threshold (mty)		10,000
CEQA Significant?		Yes

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
[a] Emissions are from tunnel locomotive.
[b] The CEQA baseline is zero for new construction. The CEQA baseline represents baseline operations.
TBM = tunnel boring machine
Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

NEPA Impact Determination

In compliance with the NEPA implementing regulations and CEQ guidance, anticipated emissions for Alternative 1 are disclosed relative to the NEPA baseline (see discussion under NEPA analysis) without expressing a judgment as to their significance. Therefore, there is no NEPA impact determination.

Mitigation

Although the GHG emissions were below the CEQ reference point, the same mitigation measures used under CEQA were evaluated under NEPA.

Residual Impacts

GHG emissions following mitigation are presented in Table 9-9. In compliance with the NEPA implementing regulations and CEQ guidance, the anticipated emissions for each alternative are disclosed relative to the NEPA baseline without expressing a judgment as to their significance. Therefore, there is no residual impact determination.

Table 9-9. Alternative 1 Under NEPA Annual Greenhouse Gas Emissions With Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Project Construction	
2015–2015	JWPCP East Shaft Site	5,823
2016–2018	Onshore Tunnel Alignment (TBM1)[a]	59,283
2016–2017	TraPac Shaft Site	5,825
2015–2016	LAXT Shaft Site	7,278
2016–2022	Offshore Tunnel Alignment (TBM2)[a]	242,414
2015–2016	Southwest Marine Shaft Site	5,839
2019–2021	SP Shelf Riser	3,166
2021–2022	SP Shelf Diffuser	4,427
2021–2022	Existing Ocean Outfalls	503
Total Project Construction		334,558
30-Year Amortized Project Construction Emissions (mty)		11,152
Total Alternative 1 Annual Emissions		32,806
NEPA Baseline (mty)		21,654
NEPA Increment (mty)		11,152
NEPA Reference Point[b] (mty)		25,000
NEPA Significant?		N/A

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions are from tunnel locomotive.

[b] The CEQ reference point of 25,000 mty CO_2e (CEQ 2010) used in this analysis serves as an indicator that the federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. The reference point does not constitute an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but rather a minimum standard for reporting emissions under the CAA. The NEPA reference point includes direct emissions from the federal action. Per CEQ guidance, indirect emissions are not considered in the reference point.

TBM = tunnel boring machine

Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

Impact GHG-2. Would Alternative 1 conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions?

Construction

CEQA Analysis

The state of California has adopted laws and policies directed at regulating and reducing GHG emissions (see Section 9.3). The 2007 AQMP prepared by the SCAQMD for the purpose of bringing the SCAB into attainment with the federal ozone standard will also have the concurrent benefit of reducing GHG emissions. Consequently, compliance with the laws and policies detailed in Section 9.3 and the 2007

AQMP would ensure that construction of Alternative 1 would not result in a significant GHG impact. Impacts would be less than significant.

NEPA Analysis

The NEPA analysis is not applicable to Impact GHG-2 because there is no federal policy or plan adopted to reduce GHG emissions.

Operation

CEQA Analysis

The SCAQMD used the SCAG population forecasts in developing the 2007 AQMP to estimate future emissions from all sources. The same SCAG data served as the basis for the JOS service area population estimates through the year 2050. A geographic information system model was then used to derive wastewater flow projections from the population data. Wastewater flow projections were used to quantify GHG emissions for this alternative. Therefore, the emissions generated by the Sanitation Districts operations are accounted for in the attainment strategies included in the 2007 AQMP. Alternative 1 is intended to accommodate the SCAG-projected population growth, which is accounted for in the 2007 AQMP. Consequently, Alternative 1 would be consistent with the applicable plan for reducing GHG emissions.

In addition, AB 32 aims to reduce statewide GHG emissions to 1990 levels by 2020. This act instructs CARB to adopt regulations that reduce emissions from significant sources of GHGs, and establish a mandatory GHG reporting and verification program by January 1, 2008. Alternative 1 would utilize stationary and mobile engines compliant with state and federal emission requirements, would adhere to control measures adopted by the state of California and federal government at the time of construction, and would, therefore, comply with the goals of AB 32. Impacts would be less than significant.

NEPA Analysis

The NEPA analysis is not applicable to Impact GHG-2 because there is no federal policy or plan adopted to reduce GHG emissions.

CEQA Impact Determination

Construction and operation of Alternative 1 would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

There is currently no federal plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Furthermore, the Corps is not subject to California state laws and policies directed at regulating and reducing GHG emissions. Therefore, GHG-2 is not applicable to NEPA.

Mitigation

Not applicable.

Residual Impacts
Not applicable.

9.4.3.2 Impact Summary – Alternative 1

Impacts on GHGs for Alternative 1 are summarized in Table 9-10. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 9-10. Impact Summary – Alternative 1

Impact Determination Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GHG-1. Would Alternative 1 generate GHG emissions that would have a significant impact on the environment?		
CEQA Significant Impact During Construction and Operation	**Program** MM GHG-1a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM GHG-1b (same as MM AQ-2b). All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM GHG-1c (same as MM AQ-2d). Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for use during construction, provided that they will be available prior to commencing construction and proven reliable. **Project** MM GHG-1a (same as MM AQ-2a) MM GHG-1b (same as MM AQ-2b) MM GHG-1c (same as MM AQ-2d) MM GHG-1d (same as MM AQ-2f). Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles. MM GHG-1e (same as MM AQ-2g). Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive. MM GHG-1f. Use energy efficient lighting systems, such as LED technology, during construction, where feasible.	CEQA Significant and Unavoidable Impact During Construction and Operation

Table 9-10 (Continued)

Impact Determination Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
	MM GHG-1g. Use lighter-colored pavement during construction, where feasible. MM GHG-1h. Recycle construction debris to the maximum extent feasible.	
NEPA N/A During Construction and Operation; however, GHG emissions would be below the CEQ reference point	N/A	NEPA N/A During Construction and Operation; however, GHG emissions would be below the CEQ reference point
Impact GHG-2. Would Alternative 1 conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions?		
CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
NEPA N/A During Construction	N/A	NEPA N/A During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA N/A During Operation	N/A	NEPA N/A During Operation

9.4.4 Alternative 2

Alternative 2 (Program) is the same as Alternative 1 (Program). The impacts for the onshore tunnel; the JWPCP East, TraPac (Trans Pacific Container Service Corporation), LAXT (Los Angeles Export Terminal), and Southwest Marine shaft sites; and the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

9.4.4.1 Program and Project

Impact GHG-1 and Impact GHG-2 are evaluated on a regional level and analyzed for the combined emissions of construction and operation activities that would occur for the program and project.

Impact GHG-1. Would Alternative 2 generate GHG emissions that would have a significant impact on the environment?

Construction and Operation

CEQA Analysis

Construction and operation emissions for Alternative 2 are shown in Table 9-11.

Table 9-11. Alternative 2 Under CEQA Construction and Operation Annual Greenhouse Gas Emissions Without Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Program Construction	
2018–2019	POWRP Process Optimization	1,161
2018–2019	LBWRP Process Optimization	1,476
2018–2019	LCWRP Process Optimization	1,487
2018–2020	SJCWRP Process Optimization	2,255
2035–2040	SJCWRP Plant Expansion	417
2018–2050	JWPCP Solids Processing	1,421
Total Program Construction		8,216
30-Year Amortized Program Construction Emissions (mty)		274
	Project Construction	
2015–2015	JWPCP East Shaft Site	5,825
2016–2018	Onshore Tunnel Alignment (TBM1)[a]	59,284
2016–2017	TraPac Shaft Site	5,828
2015–2016	LAXT Shaft Site	7,281
2016–2021	Offshore Tunnel Alignment (TBM2)[a]	186,358
2015–2016	Southwest Marine Shaft Site	5,841
2018–2020	PV Shelf Riser	3,167
2020–2021	PV Shelf Diffuser	4,428
2020–2020	Existing Ocean Outfalls	507
Total Project Construction		278,519
30-Year Amortized Project Construction Emissions (mty)		9,284
	Program Operation	
2050	SJCWRP Nitrification/Denitrification (mty)	2,975
2050	SJCWRP Generator (mty)	40
2050	WRPs Purchased Electricity (mty)	1,444
2050	JWPCP Combustion of Digester Gas (mty)	117
2050	JWPCP Biosolids Hauling (mty)	16,805
Total Program Operation Annual Emissions		21,380
Total Alternative 2 Annual Emissions		30,938
CEQA Baseline[b] (mty)		11,978
CEQA Increment (mty)		18,960
CEQA Threshold (mty)		10,000
CEQA Significant?		Yes

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
[a] Emissions are from tunnel locomotive.
[b] The CEQA baseline is zero for new construction. The CEQA baseline represents baseline operations.
TBM = tunnel boring machine
Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

As shown in Table 9-11, construction of Alternative 2 (Project) would occur over a 78-month construction period, starting in the first quarter of 2015 and concluding in the second quarter of 2021. Construction activities would generate GHG emissions from the tunnel locomotive, mobile and stationary construction equipment exhaust and electricity consumption, tugboat and small boat exhaust, delivery and haul truck exhaust, and employee vehicle exhaust. Operation of Alternative 2 (Project) would consist of

the primarily passive flow of treated wastewater effluent, which would not generate GHGs. Therefore, project operations would not contribute to GHG emissions. Impacts would be significant for GHG emissions for Alternative 2.

Because construction equipment and fleet vehicles would likely be more fuel efficient over time, if construction were delayed, emissions would be less than those quantified in this analysis. The construction equipment fleet mix and duration for each construction stage is detailed in the construction spreadsheets provided in Appendix 9-A.

NEPA Analysis

See the NEPA analysis under Alternative 1 for a discussion of CEQ guidance and NEPA implementing regulations. GHG emissions under NEPA would be below the 25,000 mty CO_2e reference point per CEQ guidelines, as shown in Table 9-12. Because project operations would consist of the primarily passive flow of treated wastewater effluent, GHG emissions would not be generated during operations.

Table 9-12. Alternative 2 (Project) Under NEPA Construction Annual Greenhouse Gas Emissions Without Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Project Construction	
2015–2015	JWPCP East Shaft Site	5,825
2016–2018	Onshore Tunnel Alignment (TBM1)[a]	59,284
2016–2017	TraPac Shaft Site	5,828
2015–2016	LAXT Shaft Site	7,281
2016–2021	Offshore Tunnel Alignment (TBM2)[a]	186,358
2015–2016	Southwest Marine Shaft Site	5,841
2018–2020	PV Shelf Riser	3,167
2020–2021	PV Shelf Diffuser	4,428
2020–2020	Existing Ocean Outfalls	507
Total Project Construction		278,519
30-Year Amortized Project Construction Emissions (mty)		9,284
Total Alternative 2 Annual Emissions		30,938
NEPA Baseline (mty)		21,654
NEPA Increment (mty)		9,284
NEPA Reference Point[b] (mty)		25,000
NEPA Significant?		N/A

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions are from tunnel locomotive.

[b] The CEQ reference point of 25,000 mty CO_2e (CEQ 2010) used in this analysis serves as an indicator that the federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. The reference point does not constitute an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but rather a minimum standard for reporting emissions under the CAA. The NEPA reference point includes direct emissions from the federal action. Per CEQ guidance, indirect emissions are not considered in the reference point.

TBM = tunnel boring machine

Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

CEQA Impact Determination

The combination of emissions during construction and operation of Alternative 2 would generate GHG emissions that would have a significant impact on the environment. Impacts under CEQA would be significant before mitigation.

Mitigation

Some mitigation measures that reduce criteria pollutants may also reduce GHG emissions. Therefore, implementation of the following mitigation measures, including those defined in Chapter 5, may reduce GHG emissions. However, because GHG reductions from implementing these mitigation measures are difficult to quantify, no GHG reductions are assumed.

Program

Implement MM GHG-1a (same as MM AQ-2a), MM GHG-1b (same as MM AQ-2b), and MM GHG-1c (same as MM AQ-2d).

Project

Implement MM GHG-1a (same as MM AQ-2a), MM GHG-1b (same as MM AQ-2b), MM GHG-1c (same as MM AQ-2d), MM GHG-1d (same as MM AQ-2f), MM GHG-1e (same as MM AQ-2g), MM GHG-1f, MM GHG-1g, and MM GHG-1h.

Residual Impacts

GHG emissions following mitigation are presented in Table 9-13. Residual impacts would be significant and unavoidable.

Table 9-13. Alternative 2 Under CEQA Construction and Operation Annual Greenhouse Gas Emissions With Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Program Construction	
2018–2019	POWRP Process Optimization	1,161
2018–2019	LBWRP Process Optimization	1,476
2018–2019	LCWRP Process Optimization	1,487
2018–2020	SJCWRP Process Optimization	2,255
2035–2040	SJCWRP Plant Expansion	417
2018–2050	JWPCP Solids Processing	1,421
Total Program Construction		8,216
30-Year Amortized Program Construction Emissions (mty)		274
	Project Construction	
2015–2015	JWPCP East Shaft Site	5,823
2016–2018	Onshore Tunnel Alignment (TBM1)[a]	59,250
2016–2017	TraPac Shaft Site	5,825
2015–2016	LAXT Shaft Site	7,278
2016–2021	Offshore Tunnel Alignment (TBM2)[a]	186,253
2015–2016	Southwest Marine Shaft Site	5,839
2018–2020	PV Shelf Riser	3,167
2020–2021	PV Shelf Diffuser	4,426
2020–2020	Existing Ocean Outfalls	507
Total Project Construction		278,368
30-Year Amortized Project Construction Emissions (mty)		9,279

Table 9-13 (Continued)

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Program Operation	
2050	SJCWRP Nitrification/Denitrification (mty)	2,975
2050	SJCWRP Generator (mty)	40
2050	WRPs Purchased Electricity (mty)	1,444
2050	JWPCP Combustion of Digester Gas (mty)	117
2050	JWPCP Biosolids Hauling (mty)	16,805
Total Program Operation Annual Emissions		21,380
Total Alternative 2 Annual Emissions		30,933
CEQA Baseline[b] (mty)		11,978
CEQA Increment (mty)		18,955
CEQA Threshold (mty)		10,000
CEQA Significant?		Yes

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
[a] Emissions are from tunnel locomotive.
[b] The CEQA baseline is zero for new construction. The CEQA baseline represents baseline operations.
TBM = tunnel boring machine
Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

NEPA Impact Determination

In compliance with the NEPA implementing regulations and CEQ guidance, anticipated emissions for Alternative 2 are disclosed relative to the NEPA baseline (see discussion under NEPA analysis) without expressing a judgment as to their significance. Therefore, there is no NEPA impact determination.

Mitigation

Although the GHG emissions were below the CEQ reference point, the same mitigation measures used under CEQA were evaluated under NEPA.

Residual Impacts

GHG emissions following mitigation are presented in Table 9-14. In compliance with the NEPA implementing regulations and CEQ guidance, the anticipated emissions for each alternative are disclosed relative to the NEPA baseline without expressing a judgment as to their significance. Therefore, there is no residual impact determination.

Table 9-14. Alternative 2 Under NEPA Annual Greenhouse Gas Emissions With Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Project Construction	
2015–2015	JWPCP East Shaft Site	5,823
2016–2018	Onshore Tunnel Alignment (TBM1)[a]	59,250
2016–2017	TraPac Shaft Site	5,825
2015–2016	LAXT Shaft Site	7,278
2016–2021	Offshore Tunnel Alignment (TBM2)[a]	186,253
2015–2016	Southwest Marine Shaft Site	5,839
2018–2020	PV Shelf Riser	3,167

Table 9-14 (Continued)

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
2020–2021	PV Shelf Diffuser	4,426
2020–2020	Existing Ocean Outfalls	507
Total Project Construction		278,368
30-Year Amortized Project Construction Emissions (mty)		9,279
Total Alternative 2 Annual Emissions		30,933
NEPA Baseline (mty)		21,654
NEPA Increment (mty)		9,279
NEPA Reference Point[b] (mty)		25,000
NEPA Significant?		N/A

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions are from tunnel locomotive.

[b] The CEQ reference point of 25,000 mty CO2e (CEQ 2010) used in this analysis serves as an indicator that the federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. The reference point does not constitute an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but rather a minimum standard for reporting emissions under the CAA. The NEPA reference point includes direct emissions from the federal action. Per CEQ guidance, indirect emissions are not considered in the reference point.

TBM = tunnel boring machine

Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

Impact GHG-2. Would Alternative 2 conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions?

GHG emission impacts are analyzed on a regional basis. Consequently, the impacts under Impact GHG-2 would be common to all alternatives. Refer to the discussion for this impact under Alternative 1. Plan under Impact GHG-2 does not refer to Tier 2 of the SCAQMD GHG CEQA Significance Threshold.

9.4.4.2 Impact Summary – Alternative 2

Impacts on GHGs for Alternative 2 are summarized in Table 9-15. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 9-15. Impact Summary – Alternative 2

Impact Determination Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GHG-1. Would Alternative 2 generate GHG emissions that would have a significant impact on the environment?		
CEQA Significant Impact During Construction and Operation	**Program** MM GHG-1a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM GHG-1b (same as MM AQ-2b). All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM GHG-1c (same as MM AQ-2d). Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for use during construction, provided that they will be available prior to commencing construction and proven reliable. **Project** MM GHG-1a (same as MM AQ-2a) MM GHG-1b (same as MM AQ-2b) MM GHG-1c (same as MM AQ-2d) MM GHG-1d (same as MM AQ-2f). Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles. MM GHG-1e (same as MM AQ-2g). Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive. MM GHG-1f. Use energy efficient lighting systems, such as LED technology, during construction, where feasible. MM GHG-1g. Use lighter-colored pavement during construction, where feasible. MM GHG-1h. Recycle construction debris to the maximum extent feasible.	CEQA Significant and Unavoidable Impact During Construction and Operation
NEPA N/A During Construction and Operation; however, GHG emissions would be below the CEQ reference point	N/A	NEPA N/A During Construction and Operation; however, GHG emissions would be below the CEQ reference point

Table 9-15 (Continued)

Impact Determination Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GHG-2. Would Alternative 2 conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions?		
CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
NEPA N/A During Construction	N/A	NEPA N/A During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA N/A During Operation	N/A	NEPA N/A During Operation

9.4.5 Alternative 3

Alternative 3 (Program) is the same as Alternative 1 (Program). The impacts for the construction of the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as for Alternative 2 (Project). The impacts for the rehabilitation of the existing ocean outfalls would be the same as for Alternative 1 (Project).

9.4.5.1 Program and Project

Impact GHG-1 and Impact GHG-2 are evaluated on a regional level and analyzed for the combined emissions of construction and operation activities that would occur for the program and project.

Impact GHG-1. Would Alternative 3 generate GHG emissions that would have a significant impact on the environment?

Construction and Operation

CEQA Analysis

Construction and operation emissions for Alternative 3 are shown in Table 9-16.

Table 9-16. Alternative 3 Under CEQA Construction and Operation Annual Greenhouse Gas Emissions Without Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons/year)
	Program Construction	
2018–2019	POWRP Process Optimization	1,161
2018–2019	LBWRP Process Optimization	1,476
2018–2019	LCWRP Process Optimization	1,487
2018–2020	SJCWRP Process Optimization	2,255
2035–2040	SJCWRP Plant Expansion	417
2018–2050	JWPCP Solids Processing	1,421
Total Program Construction		8,216
30-Year Amortized Program Construction Emissions (mty)		274

Table 9-16 (Continued)

Time Period	Element/Phase	Total CO_2e Emissions (metric tons/year)
	Project Construction	
2015–2015	JWPCP West Shaft Site	5,825
2016–2021	Onshore/Offshore Tunnel Alignment (TBM1)[a]	148,413
2019–2019	Angels Gate Shaft Site	4,385
2018–2020	PV Shelf Riser	3,167
2020–2021	PV Shelf Diffuser	4,428
2020–2020	Existing Ocean Outfalls	507
Total Project Construction		166,725
30-Year Amortized Project Construction Emissions (mty)		5,558
	Program Operation	
2050	SJCWRP Nitrification/Denitrification (mty)	2,975
2050	SJCWRP Generator (mty)	40
2050	WRPs Purchased Electricity (mty)	1,444
2050	JWPCP Combustion of Digester Gas (mty)	117
2050	JWPCP Biosolids Hauling (mty)	16,805
Total Program Operation		21,380
Total Alternative 3 Annual Emissions		27,211
CEQA Baseline[b] (mty)		12,017
CEQA Increment (mty)		14,698
CEQA Threshold (mty)		10,000
CEQA Significant?		Yes

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
[a] Emissions are from tunnel locomotive.
[b] The CEQA baseline is zero for new construction. The CEQA baseline represents baseline operations.
TBM = tunnel boring machine
Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

As shown in Table 9-16, construction of Alternative 3 (Project) would occur over a 78-month construction period, starting in the first quarter of 2015 and concluding in the second quarter of 2021. Construction activities would generate GHG emissions from the tunnel locomotive, mobile and stationary construction equipment exhaust and electricity consumption, tugboat and small boat exhaust, delivery and haul truck exhaust, and employee vehicle exhaust. Operation of Alternative 3 (Project) would consist of the primarily passive flow of treated wastewater effluent, which would not generate GHGs. Therefore, project operations would not contribute to GHG emissions. As shown in Table 9-16, impacts would be significant for GHG emissions for Alternative 3.

Because construction equipment and fleet vehicles would likely be more fuel efficient over time, if construction were delayed, emissions would be less than those quantified in this analysis. The construction equipment fleet mix and duration for each construction stage is detailed in the construction spreadsheets provided in Appendix 9-A.

NEPA Analysis

See the NEPA analysis under Alternative 1 for a discussion of CEQ guidance and NEPA implementing regulations. GHG emissions under NEPA would be below the 25,000 mty CO_2e reference point per CEQ guidelines, as shown in Table 9-17. Because project operations would consist of a new ocean discharge

system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, GHG emissions would not be generated during operations.

Table 9-17. Alternative 3 Under NEPA Construction Annual Greenhouse Gas Emissions Without Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Project Construction	
2015–2015	JWPCP West Shaft Site	5,825
2016–2021	Onshore/Offshore Tunnel Alignment (TBM1)[a]	148,413
2019–2019	Angels Gate Shaft Site	4,385
2018–2020	PV Shelf Riser	3,167
2020–2021	PV Shelf Diffuser	4,428
2020–2020	Existing Ocean Outfalls	507
Total Project Construction		166,725
30-Year Amortized Project Construction Emissions (mty)		5,558
Total Alternative 3 Annual Emissions		27,211
NEPA Baseline (mty)		21,654
NEPA Increment (mty)		5,557
NEPA Reference Point[b] (mty)		25,000
NEPA Significant?		N/A

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions are from tunnel locomotive.

[b] The CEQ reference point of 25,000 mty CO_2e (CEQ 2010) used in this analysis serves as an indicator that the federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. The reference point does not constitute an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but rather a minimum standard for reporting emissions under the CAA. The NEPA reference point includes direct emissions from the federal action. Per CEQ guidance, indirect emissions are not considered in the reference point.

TBM = tunnel boring machine

Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

CEQA Impact Determination

The combination of emissions during construction and operation of Alternative 3 would generate GHG emissions that would have a significant impact on the environment. Impacts under CEQA would be significant before mitigation.

Mitigation

Some mitigation measures that reduce criteria pollutants may also reduce GHG emissions. Therefore, implementation of the following mitigation measures, including those defined in Chapter 5, may reduce GHG emissions. However, because GHG reductions from implementing these mitigation measures are difficult to quantify, no GHG reductions are assumed.

Program

Implement MM GHG-1a (same as MM AQ-2a), MM GHG-1b (same as MM AQ-2b), and MM GHG-1c (same as MM AQ-2d).

Project

Implement MM GHG-1a (same as MM AQ-2a), MM GHG-1b (same as MM AQ-2b), MM GHG-1c (same as MM AQ-2d), MM GHG-1d (same as MM AQ-2f), MM GHG-1e (same as MM AQ-2g), MM GHG-1f, MM GHG-1g, and MM GHG-1h.

Residual Impacts

GHG emissions following mitigation are presented in Table 9-18. Residual impacts would be significant and unavoidable.

Table 9-18. Alternative 3 Under CEQA Construction and Operation Annual Greenhouse Gas Emissions With Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Program Construction	
2018–2019	POWRP Process Optimization	1,161
2018–2019	LBWRP Process Optimization	1,476
2018–2019	LCWRP Process Optimization	1,487
2018–2020	SJCWRP Process Optimization	2,255
2035–2040	SJCWRP Plant Expansion	417
2018–2050	JWPCP Solids Processing	1,421
Total Program Construction		8,216
30-Year Amortized Program Construction Emissions (mty)		274
	Project Construction	
2015–2015	JWPCP West Shaft Site	5,823
2016–2021	Onshore/Offshore Tunnel Alignment (TBM1)[a]	148,329
2019–2019	Angels Gate Shaft Site	4,383
2018–2020	PV Shelf Riser	3,167
2020–2021	PV Shelf Diffuser	4,426
2020–2020	Existing Ocean Outfalls	507
Total Project Construction		166,635
30-Year Amortized Project Construction Emissions (mty)		5,554
	Program Operation	
2050	SJCWRP Nitrification/Denitrification (mty)	2,975
2050	SJCWRP Generator (mty)	40
2050	WRPs Electricity Purchased (mty)	1,444
2050	JWPCP Combustion of Digester Gas (mty)	117
2050	JWPCP Biosolids Hauling (mty)	16,805
Total Program Operation Annual Emissions		21,380
Total Alternative 3 Annual Emissions		27,208
CEQA Baseline[b] (mty)		11,978
CEQA Increment (mty)		15,231
CEQA Threshold (mty)		10,000
CEQA Significant?		Yes

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions are from tunnel locomotive.

[b] The CEQA baseline is zero for new construction. The CEQA baseline represents baseline operations.

TBM = tunnel boring machine

Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

NEPA Impact Determination

In compliance with the NEPA implementing regulations and CEQ guidance, anticipated emissions for Alternative 3 are disclosed relative to the NEPA baseline (see discussion under NEPA analysis) without expressing a judgment as to their significance. Therefore, there is no NEPA impact determination.

Mitigation

Although the GHG emissions were below the CEQ reference point, the same mitigation measures used under CEQA were evaluated under NEPA.

Residual Impacts

GHG emissions following mitigation are presented in Table 9-19. In compliance with the NEPA implementing regulations and CEQ guidance, the anticipated emissions for each alternative are disclosed relative to the NEPA baseline without expressing a judgment as to their significance. Therefore, there is no residual impact determination.

Table 9-19. Alternative 3 Under NEPA Annual Greenhouse Gas Emissions With Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Project Construction	
2015–2015	JWPCP West Shaft Site	5,823
2016–2021	Onshore/Offshore Tunnel Alignment (TBM1)[a]	148,329
2019–2019	Angels Gate Shaft Site	4,383
2018–2020	PV Shelf Riser	3,167
2020–2021	PV Shelf Diffuser	4,426
2020–2020	Existing Ocean Outfalls	507
Total Project Construction		166,635
30-Year Amortized Project Construction Emissions (mty)		5,554
Total Alternative 3 Annual Emissions		27,208
NEPA Baseline (mty)		21,654
NEPA Increment (mty)		5,554
NEPA Reference Point[b] (mty)		25,000
NEPA Significant?		N/A

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions are from tunnel locomotive.

[b] The CEQ reference point of 25,000 mty CO_2e (CEQ 2010) used in this analysis serves as an indicator that the federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. The reference point does not constitute an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but rather a minimum standard for reporting emissions under the CAA. The NEPA reference point includes direct emissions from the federal action. Per CEQ guidance, indirect emissions are not considered in the reference point.

TBM = tunnel boring machine

Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

Impact GHG-2. Would Alternative 3 conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions?

GHG emission impacts are analyzed on a regional basis. Consequently, the impacts under Impact GHG-2 would be common to all alternatives. Refer to the discussion for this impact under Alternative 1. Plan under Impact GHG-2 does not refer to Tier 2 of the SCAQMD GHG CEQA Significance Threshold.

9.4.5.2 Impact Summary – Alternative 3

Impacts on GHGs for Alternative 3 are summarized in Table 9-20. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 9-20. Impact Summary - Alternative 3

Impact Determination Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GHG-1. Would Alternative 3 generate GHG emissions that may have a significant impact on the environment?		
CEQA Significant Impact During Construction and Operation	**Program** MM GHG-1a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM GHG-1b (same as MM AQ-2b). All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM GHG-1c (same as MM AQ-2d). Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for use during construction, provided that they will be available prior to commencing construction and proven reliable. **Project** MM GHG-1a (same as MM AQ-2a) MM GHG-1b (same as MM AQ-2b) MM GHG-1c (same as MM AQ-2d) MM GHG-1d (same as MM AQ-2f). Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles. MM GHG-1e (same as MM AQ-2g). Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive. MM GHG-1f. Use energy efficient lighting systems, such as LED technology, during construction, where feasible. MM GHG-1g. Use lighter-colored pavement during construction, where feasible. MM GHG-1h. Recycle construction debris to the maximum extent feasible.	CEQA Significant and Unavoidable Impact During Construction and Operation
NEPA N/A During Construction and Operation; however, GHG emissions would be below the CEQ reference point	N/A	NEPA N/A During Construction and Operation; however, GHG emissions would be below the CEQ reference point

Table 9-20 (Continued)

Impact Determination Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GHG-2. Would Alternative 3 conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions?		
CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
NEPA N/A During Construction	N/A	NEPA N/A During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA N/A During Operation	N/A	NEPA N/A During Operation

9.4.6 Alternative 4 (Recommended Alternative)

Alternative 4 (Program) is the same as Alternative 1 (Program). The impacts for the construction of the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years. The construction impacts for rehabilitation of the existing ocean outfalls for Alternative 4 would be the same as for Alternative 1 (Project).

9.4.6.1 Program and Project

Impact GHG-1 and Impact GHG-2 are evaluated on a regional level and analyzed for the combined emissions of construction and operation activities that would occur for the program and project.

Impact GHG-1. Would Alternative 4 generate GHG emissions that would have a significant impact on the environment?

Construction and Operation

CEQA Analysis

Construction and operation emissions for Alternative 4 are shown in Table 9-21.

Table 9-21. Alternative 4 Under CEQA Construction and Operation Annual Greenhouse Gas Emissions Without Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Program Construction	
2018–2019	POWRP Process Optimization	1,161
2018–2019	LBWRP Process Optimization	1,476
2018–2019	LCWRP Process Optimization	1,487
2018–2020	SJCWRP Process Optimization	2,255
2035–2040	SJCWRP Plant Expansion	417
2018–2050	JWPCP Solids Processing	1,421
Total Program Construction		8,216
30-Year Amortized Program Construction Emissions (mty)		274

Table 9-21 (Continued)

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Project Construction	
2015–2015	JWPCP West Shaft Site	5,825
2016–2020	Onshore Tunnel Alignment (TBM1)[a]	118,731
2019–2021	Royal Palms Shaft Site	4,385
2019–2020	Existing Ocean Outfalls	507
Total Project Construction		129,447
30-Year Amortized Project Construction Emissions (mty)		4,315
	Program Operation	
2050	SJCWRP Nitrification/Denitrification (mty)	2,975
2050	SJCWRP Generator (mty)	40
2050	WRPs Purchased Electricity (mty)	1,444
2050	JWPCP Combustion of Digester Gas (mty)	117
2050	JWPCP Biosolids Hauling (mty)	16,805
Total Program Operation Annual Emissions		21,380
Total Alternative 4 Annual Emissions		25,969
CEQA Baseline[b] (mty)		11,978
CEQA Increment (mty)		13,991
CEQA Threshold (mty)		10,000
CEQA Significant?		Yes

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
[a] Emissions are from tunnel locomotive.
[b] The CEQA baseline is zero for new construction. The CEQA baseline represents baseline operations.
TBM = tunnel boring machine
Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

As shown in Table 9-21, construction of Alternative 4 (Project) would occur over a 78-month construction period, starting in the first quarter of 2015 and concluding in the second quarter of 2021. Construction activities would generate GHG emissions from the tunnel locomotive, mobile and stationary construction equipment exhaust and electricity consumption, tugboat and small boat exhaust, delivery and haul truck exhaust, and employee vehicle exhaust. Operation of Alternative 4 (Project) would consist of the primarily passive flow of treated wastewater effluent, which would not generate GHGs. Therefore, project operations would not contribute to GHG emissions. As shown in Table 9-21, impacts would be significant for GHG emissions for Alternative 4.

Because construction equipment and fleet vehicles would likely be more fuel efficient over time, if construction were delayed, emissions would be less than those quantified in this analysis. The construction equipment fleet mix and duration for each construction stage is detailed in the construction spreadsheets provided in Appendix 9-A.

NEPA Analysis

See the NEPA analysis under Alternative 1 for a discussion of CEQ guidance and NEPA implementing regulations. GHG emissions under NEPA would be below the 25,000 mty CO_2e reference point per CEQ guidelines, as shown in Table 9-22. Because project operations would consist of a modified ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, GHG emissions would not be generated during operations.

Table 9-22. Alternative 4 Under NEPA Construction Annual Greenhouse Gas Emissions Without Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Project Construction	
2015–2015	JWPCP West Shaft Site	5,825
2016–2020	Onshore Tunnel Alignment (TBM1)[a]	118,731
2019–2021	Royal Palms Shaft Site	4,385
2019–2020	Existing Ocean Outfalls	507
Total Project Construction		129,447
30-Year Amortized Project Construction Emissions (mty)		4,315
Total Alternative 4 Annual Emissions		25,969
NEPA Baseline (mty)		21,654
NEPA Increment (mty)		4,315
NEPA Reference Point[b] (mty)		25,000
NEPA Significant?		N/A

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions are from tunnel locomotive.

[b] The CEQ reference point of 25,000 mty CO_2e (CEQ 2010) used in this analysis serves as an indicator that the federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. The reference point does not constitute an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but rather a minimum standard for reporting emissions under the CAA. The NEPA reference point includes direct emissions from the federal action. Per CEQ guidance, indirect emissions are not considered in the reference point.

TBM = tunnel boring machine

Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

CEQA Impact Determination

The combination of emissions during construction and operation of Alternative 4 would generate GHG emissions that would have a significant impact on the environment. Impacts under CEQA would be significant before mitigation.

Mitigation

Some mitigation measures that reduce criteria pollutants may also reduce GHG emissions. Therefore, implementation of the following mitigation measures, including those defined in Chapter 5, may reduce GHG emissions. However, because GHG reductions from implementing these mitigation measures are difficult to quantify, no GHG reductions are assumed.

Program

Implement MM GHG-1a (same as MM AQ-2a), MM GHG-1b (same as MM AQ-2b), and MM GHG-1c (same as MM AQ-2d).

Project

Implement MM GHG-1a (same as MM AQ-2a), MM GHG-1b (same as MM AQ-2b), MM GHG-1c (same as MM AQ-2d), MM GHG-1d (same as MM AQ-2f), MM GHG-1e (same as MM AQ-2g), MM GHG-1f, MM GHG-1g, and MM GHG-1h.

Residual Impacts

GHG emissions following mitigation are presented in Table 9-23. Residual impacts would be significant and unavoidable.

Table 9-23. Alternative 4 Under CEQA Construction and Operation Annual Greenhouse Gas Emissions With Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Program Construction	
2018–2019	POWRP Process Optimization	1,161
2018–2019	LBWRP Process Optimization	1,476
2018–2019	LCWRP Process Optimization	1,487
2018–2020	SJCWRP Process Optimization	2,255
2035–2040	SJCWRP Plant Expansion	417
2018–2050	JWPCP Solids Processing	1,421
Total Program Construction		8,216
30-Year Amortized Program Construction Emissions (mty)		274
	Project Construction	
2015–2015	JWPCP West Shaft Site	5,823
2016–2020	Onshore Tunnel Alignment (TBM1)[a]	118,663
2019–2020	Existing Ocean Outfalls	507
2019–2021	Royal Palms Shaft Site	4,383
Total Project Construction		129,377
30-Year Amortized Project Construction Emissions (mty)		4,313
	Program Operation	
2050	SJCWRP Nitrification/Denitrification (mty)	2,975
2050	SJCWRP Generator (mty)	40
2050	WRPs Purchased Electricity (mty)	1,444
2050	JWPCP Combustion of Digester Gas (mty)	117
2050	JWPCP Biosolids Hauling (mty)	16,805
Total Program Operation Annual Emissions		21,380
Total Alternative 4 Annual Emissions		25,966
CEQA Baseline[b] (mty)		11,978
CEQA Increment (mty)		13,989
CEQA Threshold (mty)		10,000
CEQA Significant?		Yes

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.
[a] Emissions are from tunnel locomotive.
[b] The CEQA baseline is zero for new construction. The CEQA baseline represents baseline operations.
TBM = tunnel boring machine
Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

NEPA Impact Determination

In compliance with the NEPA implementing regulations and CEQ guidance, anticipated emissions for Alternative 4 are disclosed relative to the NEPA baseline (see discussion under NEPA analysis) without expressing a judgment as to their significance. Therefore, there is no NEPA impact determination.

Mitigation

Although the GHG emissions were below the CEQ reference point, the same mitigation measures used under CEQA were evaluated under NEPA.

Residual Impacts

GHG emissions following mitigation are presented in Table 9-24. In compliance with the NEPA implementing regulations and CEQ guidance, the anticipated emissions for each alternative are disclosed relative to the NEPA baseline without expressing a judgment as to their significance. Therefore, there is no residual impact determination.

Table 9-24. Alternative 4 Under NEPA Annual Greenhouse Gas Emissions With Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Project Construction	
2015–2015	JWPCP West Shaft Site	5,823
2016–2020	Onshore Tunnel Alignment (TBM1)[a]	118,663
2019–2021	Royal Palms Shaft Site	4,383
2019–2020	Existing Ocean Outfalls	507
Total Project Construction		129,377
30-Year Amortized Project Construction Emissions (mty)		4,313
Total Alternative 4 Annual Emissions		25,966
NEPA Baseline (mty)		21,654
NEPA Increment (mty)		4,313
NEPA Reference Point[b] (mty)		25,000
NEPA Significant?		N/A

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions are from tunnel locomotive.

[b] The CEQ reference point of 25,000 mty CO_2e (CEQ 2010) used in this analysis serves as an indicator that the federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review. The reference point does not constitute an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but rather a minimum standard for reporting emissions under the CAA. The NEPA reference point includes direct emissions from the federal action. Per CEQ guidance, indirect emissions are not considered in the reference point.

TBM = tunnel boring machine

Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

Impact GHG-2. Would Alternative 4 conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions?

GHG emission impacts are analyzed on a regional basis. Consequently, the impacts under Impact GHG-2 would be common to all alternatives. Refer to the discussion for this impact under Alternative 1. Plan under Impact GHG-2 does not refer to Tier 2 of the SCAQMD GHG CEQA Significance Threshold.

9.4.6.2 Impact Summary – Alternative 4

Impacts on GHGs for Alternative 4 are summarized in Table 9-25. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 9-25. Impact Summary – Alternative 4

Impact Determination Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GHG-1. Would Alternative 4 generate GHG emissions that may have a significant impact on the environment?		
CEQA Significant Impact During Construction and Operation	**Program** MM GHG-1a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM GHG-1b (same as MM AQ-2b). All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM GHG-1c (same as MM AQ-2d). Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for use during construction, provided that they will be available prior to commencing construction and proven reliable. **Project** MM GHG-1a (same as MM AQ-2a) MM GHG-1b (same as MM AQ-2b) MM GHG-1c (same as MM AQ-2d) MM GHG-1d (same as MM AQ-2f). Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles. MM GHG-1e (same as MM AQ-2g). Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive. MM GHG-1f. Use energy efficient lighting systems, such as LED technology, during construction, where feasible. MM GHG-1g. Use lighter-colored pavement during construction, where feasible. MM GHG-1h. Recycle construction debris to the maximum extent feasible.	CEQA Significant and Unavoidable Impact During Construction and Operation
NEPA N/A During Construction and Operation; however, GHG emissions would be below the CEQ reference point	N/A	NEPA N/A During Construction and Operation; however, GHG emissions would be below the CEQ reference point

Table 9-25 (Continued)

Impact Determination Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact GHG-2. Would Alternative 4 conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions?		
CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
NEPA N/A During Construction	N/A	NEPA N/A During Construction
CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
NEPA N/A During Operation	N/A	NEPA N/A During Operation

9.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an EIR must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

9.4.7.1 Program

Construction and operation emissions for Alternative 5 are shown in Table 9-26.

Table 9-26. Alternative 5 Under CEQA Construction and Operation Annual Greenhouse Gas Emissions Without Mitigation

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
	Program Construction	
2035-2040	SJCWRP Plant Expansion	417
2018-2050	JWPCP Solids Processing	1,421
Total Program Construction		1,837
30-Year Amortized Program Construction Emissions (mty)		61
	Program Operation	
2050	SJCWRP Nitrification/Denitrification (mty)	2,975
2050	SJCWRP Generator (mty)	40
2050	WRPs Electricity Purchased at SJCWRP (mty)	1,444
2050	JWPCP Combustion of Digester Gas (mty)	117
2050	JWPCP Biosolids Hauling (mty)	16,805

Table 9-26 (Continued)

Time Period	Element/Phase	Total CO_2e Emissions (metric tons)
Total Program Operation Annual Emissions		21,3780
Total Alternative 5 Annual Emissions		21,4341
CEQA Baseline[b] (mty)		11,978
CEQA Increment (mty)		9,463
CEQA Threshold (mty)		10,000
CEQA Significant?		No

All numbers are rounded; therefore, totals may differ slightly from tabular calculations.

[a] Emissions are from tunnel locomotive.

[b] The CEQA baseline is zero for new construction. The CEQA baseline represents baseline operations.

Sources: CARB 2006a, 2006b, 2005a, 2005b; CR 2011; Cooper 2004; SCAQMD 2008; Starcrest 2009; EPA 2005, 1995; DieselNet 2011

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for plant expansion at the SJCWRP, WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994). Operational emissions associated with Alternative 5 (Program) would be the same as Alternative 1 (Program), excluding process optimization at the WRPs. As shown in Table 9-26, impacts would be less than significant.

9.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. The emergency discharges would not result in impacts on the GHG emissions resource area, as the discharge would consist of water flowing through an existing river channel.

9.4.7.3 Impact Summary – Alternative 5

There would be less than significant impacts on GHGs for Alternative 5.

9.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses as described in Sections 3.4.1.6 and 9.5.5.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

9.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

9.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

9.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. In compliance with NEPA implementing regulations and CEQ guidance, no impact determination was made for Alternative 6 (project). Furthermore, there is currently no federal plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

9.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on GHGs resulting from the construction and/or operation of program and/or project elements is provided in Table 9-27. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 9-27. Comparison of Significant Impacts and Mitigation for Greenhouse Gas Emissions for All Alternatives

Impact Determination Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternatives 1, 2, 3, and 4		
Impact GHG-1. Would Alternatives 1 through 4 generate GHG emissions that would have a significant impact on the environment?		
CEQA Significant Impact During Construction and Operation	**Program** MM GHG-1a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than 14,000 pounds will have a 2007 model year engine or newer, or be equipped with a particulate matter trap. MM GHG-1b (same as MM AQ-2b). All off-road diesel-powered equipment used during construction will be equipped with a U.S. Environmental Protection Agency (EPA) Tier 3 engine, except for specialized construction equipment in which an EPA Tier 3 engine is not available, and a diesel particulate matter trap. MM GHG-1c (same as MM AQ-2d). Commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for use during construction, provided that they will be available prior to commencing construction and proven reliable.	CEQA Significant and Unavoidable Impact During Construction and Operation

Table 9-27 (Continued)

Impact Determination Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
	Project MM GHG-1a (same as MM AQ-2a) MM GHG-1b (same as MM AQ-2b) MM GHG-1c (same as MM AQ-2d) MM GHG-1d (same as MM AQ-2f). Use harbor craft with the cleanest marine diesel engines available at the Port of Los Angeles. MM GHG-1e (same as MM AQ-2g). Use a U.S. Environmental Protection Agency Tier 4 engine to power the tunnel locomotive. MM GHG-1f. Use energy efficient lighting systems, such as LED technology, during construction, where feasible. MM GHG-1g. Use lighter-colored pavement during construction, where feasible. MM GHG-1h. Recycle construction debris to the maximum extent feasible.	
NEPA N/A During Construction and Operation; however, GHG emissions would be below the CEQ reference point	N/A	NEPA N/A During Construction and Operation; however, GHG emissions would be below the CEQ reference point

Chapter 10
HAZARDS AND HAZARDOUS MATERIALS

10.1 Introduction

This chapter describes existing conditions and applicable regulations related to hazards and hazardous materials. It analyzes potential impacts associated with existing and introduced hazards and hazardous materials that would result from implementation of program and project elements during construction and operation, and determines the significance of those impacts. This chapter provides an overview of what hazardous materials are; identifies the types of hazardous materials that currently exist at the regional and program setting, and at the project setting; summarizes the regulations that govern the handling, use, and disposal of hazardous materials; and analyzes the program and project impacts, including mitigation measures, to reduce significant impacts where feasible.

For impacts associated with air pollutants, refer to Chapter 5. For impacts associated with hazards and hazardous materials resulting from construction of the riser and diffuser, and existing ocean outfalls, refer to Chapter 13. Assessments regarding hazards and hazardous materials for construction and operation of project elements were conducted for the Clearwater Program by Parsons. The results of these assessments are documented in the feasibility report (Parsons 2011), which are incorporated herein by reference.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in the environmental impact report/environmental impact statement (EIR/EIS). The EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the impact analysis for each program element is summarized by alternative in Table 10-1.

Table 10-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	-
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	O
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 10-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	-
Biosolids Management	X	X	X	X	X	N/A	O	-
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 10-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 10.4.7 for a discussion of the No-Project Alternative.
[b] See Section 10.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, JWPCP effluent management was the one program element carried forward as a project. The location of the hazards and hazardous materials impact analysis for each project element is summarized by alternative in Table 10-2.

Table 10-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	C
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	C
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	C
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	C
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	C,O	C
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C
JWPCP West			X	X	N/A	N/A	C,O	C
TraPac	X	X			N/A	N/A	C,O	C
LAXT	X	X			N/A	N/A	C,O	C

Table 10-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Southwest Marine	X	X			N/A	N/A	C,O	C
Angels Gate			X		N/A	N/A	C,O	C
Royal Palms				X	N/A	N/A	C,O	C
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	See Chapter 13.	
PV Shelf		X	X		N/A	N/A	See Chapter 13.	
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	See Chapter 13.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 10.4.7 for a discussion of the No-Project Alternative.
[b] See Section 10.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

10.2 Environmental Setting

10.2.1 Program Setting

A hazardous material is any substance or material that, because of its physical or chemical characteristics, may pose a real hazard to human health or the environment. Hazardous materials may be classified as toxic, flammable, corrosive, or reactive. The following classifications of hazardous materials may be stored, handled, or transported within the Joint Outfall System (JOS) service area for the purposes of maintaining operating equipment: corrosive materials, explosive materials, oxidizing materials, toxic materials, unstable materials, radioactive materials, and water-reactive materials. Hazardous materials can also be found in contaminated soil or groundwater in the form of petroleum hydrocarbons, volatile organic compounds (VOCs), or chlorinated solvents that have been released into the subsurface from surface spills, leaking underground storage tanks (LUSTs), which can be from a variety of sources unrelated to the JOS facilities. If contaminated groundwater or soil exceeds certain state or federal thresholds, it is considered hazardous and must be treated and disposed of in designated facilities. See Section 10.3 for additional information regarding state and federal regulations.

Conveyance System

The conveyance system transports all wastewater in the JOS service area to the six upstream water reclamation plants (WRPs) and the JWPCP, which treat the wastewater to appropriate levels. Wastewater generated by industrial facilities and processes could contain hazardous materials. All hazardous materials disposed of within the conveyance system are strictly regulated by the Clean Water Act (CWA) under the federal Pretreatment Program, which are regulations governing the input of wastewater from industrial and commercial dischargers based on the authority of the CWA (Section 10.3.1.4). Each industrial discharger within the JOS service area is issued an Industrial Waste Discharge Permit by the Sanitation Districts of Los Angeles County (Sanitation Districts), setting limits for wastewater discharges to the conveyance system. These discharges are regularly monitored and tested, and results are reported to the Sanitation Districts to ensure that industrial facilities are meeting their discharge permit requirements.

San Jose Creek Water Reclamation Plant

The San Jose Creek Water Reclamation Plant (SJCWRP) currently uses chlorine gas, sulfur dioxide, and aqueous ammonia as part of the wastewater treatment process. These chemicals are considered corrosive and represent inhalation, ingestion, and contact hazards. The plant has a hazardous materials inventory (HMI) statement and a consolidated contingency plan, as well as a federal risk management plan (RMP) and a California Accidental Release Prevention Program (CalARP) RMP, to properly manage and control these hazardous materials. See Section 10.3 for the regulatory details and requirements of these plans. The Los Angeles County Fire Department and United States (U.S.) Environmental Protection Agency (EPA) have authority over the management of hazardous materials at the SJCWRP.

The SJCWRP is not identified in any of the California hazardous materials databases, including the California Environmental Protection Agency's (CalEPA) Department of Toxic Substances Control (DTSC) Hazardous Waste and Substances Sites (Cortese) List, the DTSC's EnviroStor database of hazardous substances release sites, or the California database of LUSTs provided on the State Water Resources Control Board's (SWRCB) GeoTracker website (see Section 10.3.2.10). Within the vicinity of the SJCWRP, two LUST cases were reported that are unrelated to the Sanitation Districts. These cases have been completed and closed, and would not present a hazard within the SJCWRP property (SWRCB 2009).

10.2.2 Project Setting

Existing conditions related to hazards and hazardous materials associated with project elements discussed in this EIR/EIS are described in the following section. Areas of known contamination within 0.25 mile of the project elements are summarized in Table 10-3. The tunnel alignments are not included in the table because they are located deep below the ground surface; therefore, the risk of contamination is low.

Table 10-3. Known Contamination Sites Within 0.25 Mile of Project Element

Project Element	Listed Pursuant to California Government Code Section 65962.5?[a]	Known Contamination Onsite?	Known Contamination Within 0.25 Mile of Site?
JWPCP East Shaft Site	Yes	Yes	Yes
JWPCP West Shaft Site	No	No	Yes
TraPac Shaft Site	No	No	Yes
LAXT Shaft Site	No	No	Yes
Southwest Marine Shaft Site	No	No	Yes
Angels Gate Shaft Site	No	No	No
Royal Palms Shaft Site	No	No	No

[a] California Government Code Section 65962.5 is discussed in Section 10.3.2.10.
Source: Parsons 2011

10.2.2.1 Tunnel Alignment

Wilmington to San Pedro Shelf Alignment

The Wilmington to San Pedro Shelf (SP Shelf) alignment would extend beneath the city of Carson and the Wilmington community in the city of Los Angeles to a maximum depth of approximately 200 feet below ground surface (bgs). The alignment would pass through the Wilmington Oil Field, which contains numerous active, idle, and abandoned oil wells (DOGGR 1978). The oil producing strata of the oil field is located at depths of approximately 2,500 to 4,000 feet bgs. As a result, the probability of encountering natural oil deposits during tunneling is low. However, methane and hydrogen sulfide (H_2S) may be encountered within the Wilmington Oil Field, particularly around active, idle, or abandoned wells.

The tunnel would extend through several geologic formations, including the Lakewood, San Pedro, Fernando, Malaga Mudstone, and Monterey Formations. The Malaga Mudstone Formation contains naturally formed hydrogen sulfide. The Fernando and Malaga Mudstone Formations contain naturally occurring hydrocarbons (oil, tar, and methane).

The onshore portion of the tunnel alignment would begin at the JWPCP East shaft site and follow Wilmington Boulevard south to the Port of Los Angeles (at the Trans Pacific Container Service Corporation [TraPac] shaft site) at a depth ranging from approximately 100 to 200 feet bgs. Releases of petroleum products have been recorded at numerous facilities adjacent to the onshore tunnel alignment.

The offshore portion of the tunnel alignment would be constructed approximately 100 to 200 feet bgs or below the seafloor, beginning at the TraPac shaft site, extending past the Los Angeles Export Terminal (LAXT) and Southwest Marine shaft sites, and continuing to the riser and diffuser area on the SP Shelf. Releases of petroleum products have been recorded at numerous facilities adjacent to the portion of the offshore tunnel alignment within the Port of Los Angeles.

Wilmington to Palos Verdes Shelf Alignment

The onshore portion of the Wilmington to Palos Verdes Shelf (PV Shelf) alignment would be the same as the onshore portion of the Wilmington to SP Shelf alignment, and the offshore portion of the tunnel alignment would be the same as the offshore portion of the Wilmington to SP Shelf alignment between the TraPac and Southwest Marine shaft sites (see discussion under the Wilmington to SP Shelf alignment). Beginning at the Southwest Marine shaft site, the offshore portion of the tunnel alignment would be constructed approximately 100 to 250 feet bgs or below the seafloor, extending to the riser and diffuser area on the PV Shelf.

Figueroa/Gaffey to Palos Verdes Shelf Alignment

Portions of the onshore Figueroa/Gaffey to PV Shelf alignment would extend through similar geologic formations as the onshore portion of the Wilmington to SP Shelf alignment. The alignment would skirt the southwestern margin of the Wilmington Oil Field; consequently, it would encounter fewer active, idle, or abandoned oil wells than the Wilmington to SP Shelf alignment.

A site listed with regulatory environmental oversight is the Defense Fuel Support Point (DFSP) located at 3171 North Gaffey Street approximately 0.25 mile west of the Figueroa Street alignment. The DFSP stores petroleum fuels in both aboveground and belowground storage tanks. Leakage of petroleum fluids during the operation of the DFSP resulted in significant contamination of both the soil and groundwater. The Los Angeles Regional Water Quality Control Board (RWQCB) oversees the monitoring and remediation of the DFSP site.

There are three documented areas within the DFSP under investigation/remediation for environmental impacts.

- **Administration Area.** Depth to groundwater ranges from 20 to 85 feet bgs. Dissolved fuels (JP-4, JP-5, diesel, and gasoline) and related compounds (benzene, toluene, ethyl benzene, and xylenes [BTEX]) were detected in the administration area wells. Recently, a non-dissolved layer of petroleum hydrocarbons was observed as a thin sheen at multiple wells.
- **Pump House Area.** Depth to groundwater ranges from 5 to 40 feet bgs. Dissolved fuels and related compounds (benzene) were detected in the pump house wells. Free product, ranging from a thin sheen to approximately 3.3 feet thick, was observed at multiple wells.
- **Tank Farm Area.** Depth to groundwater ranges from 18 to 137 feet bgs. Dissolved fuels (JP-5, diesel, and gasoline) and related compounds (BTEX) were detected in the tank farm area

wells. Free product, ranging from a thin sheen to approximately 3.8 feet thick, was observed at multiple wells.

Groundwater is generally found between 4 and 74 feet bgs along the onshore portion of the Figueroa/Gaffey to PV Shelf alignment between the JWPCP West and Angels Gate shaft sites (Parsons 2011). Onshore tunnel depths would range from 70 to 370 feet bgs. Releases of petroleum products have been recorded at numerous facilities adjacent to the onshore portion of the tunnel alignment. Beginning at the Angels Gate shaft site, the offshore portion of the tunnel alignment would be constructed approximately 100 to 250 feet bgs or below the seafloor, extending to the riser and diffuser area on the PV Shelf.

Figueroa/Western to Royal Palms Alignment

Portions of the onshore Figueroa/Western to Royal Palms alignment would extend through similar geologic formations as the onshore portion of the Wilmington to SP Shelf alignment. The alignment would briefly skirt the southwestern margin of the Wilmington Oil Field and may include the southeastern margin of the Torrance Oil Field. Relatively few active, idle, or abandoned oil wells are mapped in the vicinity of the alignment (DOGGR 2003; 2005).

The onshore portion of the tunnel alignment would begin at the JWPCP West shaft site and continue south on Figueroa Street, Gaffey Street, Capitol Drive, and Western Avenue to the Royal Palms shaft site. Groundwater is highly variable along the alignment and generally found approximately 30 feet bgs in the lower Wilmington area and up to approximately 140 feet bgs (or more) in the higher Rolling Hills area. The onshore tunnel depth would range from approximately 70 to 450 feet bgs. The tunnel would tie into the Sanitation Districts' existing manifold structure located at Royal Palms Beach. As with the other potential tunnel alignments, releases of petroleum products have been recorded at numerous facilities adjacent to the tunnel alignment.

10.2.2.2 Shaft Sites

JWPCP East

The JWPCP East shaft site would be located on the former Fletcher Oil and Refining Company (FORCO) site, which has at least five abandoned oil wells (Parsons 2011). The FORCO site is currently under remediation for the removal of VOCs and petroleum products that are affecting the groundwater and soil (Parsons 2011). Groundwater is generally 45 to 65 feet bgs. The JWPCP East shaft site is approximately 0.75 mile east of the I-110 Freeway. Aerially deposited lead (ADL) and asbestos on surface soils at the shaft site are likely due to vehicle emissions that occurred prior to the use of unleaded fuel and asbestos-free brake pads.

JWPCP West

The JWPCP West shaft site is generally flat and currently used by the Sanitation Districts as a contractor staging area. The site does not have a history of contamination, and there are no records of contaminated soil or groundwater. There are several oil wells on the property, including at least one that appears to be active (Parsons 2011). The JWPCP West shaft site is located adjacent to the I-110 Freeway. ADL and asbestos on surface soils at the shaft site are likely due to vehicle emissions that occurred prior to the use of unleaded fuel and asbestos-free brake pads.

TraPac

There are no records of contamination for the TraPac shaft site; however, the site is located on the TraPac Terminal, which is known to have had past groundwater and soil contamination at various locations throughout its 176 acres (Berths 136–147 Terminal EIS/EIR 2007). Furthermore, there is one open LUST

site and one other cleanup site located upgradient and within the general vicinity of the TraPac shaft site (GeoTracker 2011a). Other cleanup sites are not overseen by the Underground Tank Program or the Well Investigation Program, but require investigation and corrective action under the Site Cleanup Program. This program is not restricted to particular pollutants or environments and includes pollutants such as solvents, petroleum fuels, and heavy metals as well as environments such as surface water and groundwater (LARWQCB 2011). The closest open cleanup site is Dichter Lumber Sales located at 221 Gulf Avenue approximately 300 feet to the east of the TraPac shaft site. The contaminants of concern include petroleum, fuels, and oils. A leak was reported in 1965, and a site assessment commenced in December 1998. No clean-up actions have been reported since the case was opened in 1998 (GeoTracker 2011b). The closest open LUST site is Rocket #5 located at 302 Figueroa Street less than 0.5 mile northwest of the TraPac shaft site. The contaminant of concern is gasoline, which has potentially affected an aquifer used for drinking water supply. However, the downgradient extent of the groundwater plume has not been defined, and the extent of contamination has not been determined (GeoTracker 2011c).

The TraPac shaft site is approximately 0.42 mile east of the I-110 Freeway. ADL and asbestos on surface soils at the shaft site could be present due to vehicle emissions that occurred prior to the use of unleaded fuel and asbestos-free brake pads.

LAXT

LAXT was historically used for coal and petroleum coke storage and transport activities, which have the potential to impact local exposed soils. Coal and petroleum coke contain semi-volatile organic compounds (SVOCs), some of which are recognized carcinogens. Surficial impacts on local exposed (unpaved) areas are likely (Parsons 2011). Four sites within 0.25 mile of the LAXT shaft site were identified in the Environmental Data Resources, Inc. (EDR) database (Parsons 2011).[1] The LAXT shaft site is also near railroad tracks that were installed just prior to the operation of LAXT in the late 1990s. Friction between railcar wheels and the tracks has been suspected of resulting in emissions of lead particles, which could be deposited along the tracks. Additional contaminants could include arsenic-containing herbicides, which railroad companies have historically sprayed to control vegetation along the railroad tracks, and creosote, which may be present from the use of creosote-treated railroad ties. (Parsons 2011.)

Southwest Marine

The Southwest Marine shaft site is located within the Southwest Marine shipbuilding complex, which has a history of using hazardous materials. Although this shaft site was not listed in the environmental database search, polychlorinated biphenyls (PCB) and heavy metals contamination is reportedly present in soils at the Southwest Marine ship building complex and Berth 240. The DTSC is preparing a unilateral corrective action order to address site contamination north of the shaft site (Parsons 2011).

Two sites that have the potential to affect groundwater in the immediate vicinity of the shaft site were identified in the EDR database (Parsons 2011). Petroleum-based discharges from LUSTs have been reported at both sites, and the status of each site is closed[2] (Parsons 2011).

Berths 243–245 are located immediately west/southwest of the site. Berths 243–245 are currently slips, formerly used as part of the Southwest Marine shipbuilding facility. The contaminated sediments at

[1] Environmental Database Resource reports search local, state, and federal hazardous materials and hazardous waste databases. The results from all the databases searched are compiled for identified locations, (e.g., the LAXT shaft site), and identified radii surrounding the locations (e.g., 0.25 mile).
[2] A governmental agency (or agencies) overseeing the remediation actions at a release site deem a site is "closed" when actions are no longer necessary at the site, and the site has been remediated to certain regulatory standards.

Berths 243–245 are similar to sediments in the Main Channel (to the west), where the contaminant levels were found to be well below state of California Title 22 Total Threshold Limit Concentrations (Port of Los Angeles 2009). Consequently, these sediments are not considered hazardous wastes under state or federal regulatory standards (Port of Los Angeles 2009).

Angels Gate

The Angels Gate shaft site is surrounded by parkland and is located on the former Fort MacArthur Military Reservation. Review of an installation restoration program Phase I abstract indicates that while nine waste disposal and spills sites were found on the military reservation, no potential for residual contamination and/or contaminant migration was noted (Defense Technical Information Center 1985). No records of soil or groundwater contamination were reported at the Angels Gate shaft site. No historic records of commercial or industrial activities were found. There is no record of contaminated sites within 0.25 mile of the shaft site.

Royal Palms

No records of soil or groundwater contamination were reported at the Royal Palms shaft site. No historic records of commercial or industrial activities were found for the site.

10.3 Regulatory Setting

Hazardous materials regulations applicable to the Clearwater Program are generally designed to limit the risk of upset during their use, transport, handling, storage, and disposal. These regulations are also designed to prevent the accidental release of hazardous materials and ensure the security of the Port of Los Angeles area.

10.3.1 Federal

The EPA is the primary federal agency regulating hazardous wastes and materials. The EPA broadly defines a hazardous waste as one that is specifically listed in EPA regulations, has been tested, and meets one of the four characteristics established by the EPA (toxicity, ignitability, corrosiveness, and reactivity), or that has been declared hazardous by the generator based on its knowledge of the waste. The EPA defines hazardous materials as any item or chemical that can cause harm to people, plants, or animals when released by spilling, leaking, pumping, pouring, emptying, discharging, injecting, leaching, dumping, or disposing into the environment. Federal regulations pertaining to hazardous wastes and materials are generally contained in Titles 29, 40, and 49 of the Code of Federal Regulations (CFR), which are discussed herein. The terms hazardous wastes and hazardous materials are used interchangeably in this section.

10.3.1.1 Federal Risk Management Plan

Federal RMPs are required at several of the WRPs due the quantities of chlorine gas, sodium hypochlorite, sulfur dioxide, sodium bisulfite, and/or aqueous ammonia stored, handled, and used, as specified in the federal RMP regulations (40 CFR Part 68) and the federal Occupational Safety and Health Administration's (OSHA) Process Safety Management regulations (29 CFR Part 1910.119). The RMPs include the preparation of an offsite consequence analysis of worst-case release of the stored chemicals, and preparation of emergency response plans, including coordination with local emergency response agencies. The RMPs are required to be updated at least every 5 years and when there are significant changes to the quantities of stored chemicals.

10.3.1.2 Resource Conservation and Recovery Act of 1976 (42 United States Code Sections 6901–6987)

The Resource Conservation and Recovery Act of 1976 (RCRA), including the Hazardous and Solid Waste Amendments of 1984 (HSWA), protects human health and the environment, and imposes regulations on hazardous waste generators, transporters, and operators of treatment, storage, and disposal facilities (TSDFs). The HSWA also requires the EPA to establish a comprehensive regulatory program for underground storage tanks. The corresponding regulations in 40 CFR 260–299 provide the general framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, and dispose of hazardous waste.

10.3.1.3 Hazardous Materials Transportation Act (49 Code of Federal Regulations 171, Subchapter C)

The U.S. Department of Transportation (USDOT), the Federal Highway Administration, and the Federal Railroad Administration are the three entities that regulate the transport of hazardous materials at the federal level. The Hazardous Materials Transportation Act governs the transportation of hazardous materials. These regulations are promulgated by the USDOT and enforced by the EPA.

10.3.1.4 Clean Water Act and the National Pretreatment Program

The CWA requires the elimination of the discharge of pollutants into the nation's waters. To address indirect discharges from industries to publicly owned treatment works (POTWs), the EPA, through CWA authorities, establishes the National Pretreatment Program and a component of the National Pollution Discharge Elimination System (NPDES) Permitting Program. The National Pretreatment Program requires industrial and commercial discharges to treat or control pollutants in their wastewater prior to discharges to POTWs. (EPA 1999.)

10.3.2 State

10.3.2.1 California Accidental Release Prevention Program

As specified in California Code of Regulations (CCR), Title 19, Division 2, Chapter 4.5, Articles 1 through 11, all businesses that handle specific quantities of hazardous materials are required to prepare a CalARP RMP. The CalARP RMP is the state equivalent of the federal RMP. CalARP RMPs include the preparation of an offsite consequence analysis of worst-case release of the stored chemicals and the preparation of emergency response plans, including coordination with local emergency response agencies. CalARP RMPs are required to be updated at least every 5 years, and when there are significant changes to the stored chemicals.

10.3.2.2 Hazardous Materials Release Response Plans and Inventory Act

The Hazardous Materials Release Response Plans and Inventory Act (also known as the Business Plan Act) requires a business using hazardous materials to prepare a Business Plan describing the facility, inventory, emergency response plans, and training programs. Typically, businesses prepare these plans biennially and submit them to the Los Angeles County Fire Department, Hazardous Materials Division, or local fire departments with regulatory jurisdiction over these plans.

10.3.2.3 Hazardous Waste Control Act

The state equivalent of the RCRA is the Hazardous Waste Control Act (HWCA). The HWCA created the State Hazardous Waste Management Program, which is similar to the RCRA program but generally more stringent. The HWCA establishes requirements for the proper management of hazardous substances and wastes with regard to criteria for (1) identification and classification of hazardous wastes; (2) generation and transportation of hazardous wastes; (3) design and permitting of facilities that recycle, treat, store, and dispose of hazardous wastes; (4) treatment standards; (5) operation of facilities; (6) staff training; (7) closure of facilities; and (8) liability requirements.

10.3.2.4 California Labor Code (Division 5; Parts 1, 6, 7, and 7.5)

The California Labor Code includes a collection of workplace regulations that assure appropriate training on the use and handling of hazardous materials and the operation of equipment and machines that use, store, transport, or dispose of hazardous materials. Division 5, Part 1, Chapter 2.5 ensures that employees in charge of handling hazardous materials are appropriately trained and informed regarding the materials they handle. Division 5, Part 6, governs the operation and care of hazardous material storage tanks and boilers. Division 5, Part 7, ensures employees who work with volatile flammable liquids are outfitted in appropriate safety gear and clothing. Division 5, Part 7.5, otherwise referred to as the California Refinery and Chemical Plant Worker Safety Act of 1990, was enacted to prevent or minimize the consequences of catastrophic releases of toxic, flammable, or explosive chemicals. The establishment of process safety management standards is intended to eliminate, to a substantial degree, the risks of worker exposure in petroleum refineries, chemical plants, and other related manufacturing facilities.

10.3.2.5 California Occupational Safety and Health Program

Under an agreement with OSHA, the state of California operates an occupational safety and health program in accordance with Section 18 of the Occupational Safety and Health Act of 1970. Initial approval of the California State Plan was published on May 1, 1973, and certification for completing all developmental steps was received on August 19, 1977.

The Department of Industrial Relations administers the California Occupational Safety and Health Program, commonly referred to as Cal/OSHA. The Division of Occupational Safety and Health is the principal executor of the plan and oversees enforcement and consultation.

10.3.2.6 California Code of Regulations – Environmental Protection, Solid Waste (27 CCR Division 2)

Title 27, Division 2, of the CCR contains a waste classification system that applies to solid wastes that are considered for disposal at landfill facilities. Additionally, this regulation establishes which types of waste can be disposed of at the various classifications of landfills. The regulation also directs the SWRCB and the DTSC to provide guidance on the acceptability of wastes entering landfills in order to protect underlying waters of the state.

Prior to disposal at a landfill facility, contaminated solids must be properly characterized in accordance with EPA publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Based on the analytical results, material will likely be classified as one of the following:

- Nonhazardous waste
- Non-RCRA hazardous waste (state regulated)

- RCRA hazardous waste (federally regulated)

Each waste classification has unique requirements for assessment, handling, and disposal. Many options exist for the disposal of contaminated soils including treatment, recycling, and disposal at a permitted facility or landfill. Landfills in California accepting contaminated solids are classified as:

- Class I – Accepts wastes classified as RCRA hazardous by the CCR
- Class II – Accepts hazardous waste (RCRA or non-RCRA) designated as having a lower risk, or nonhazardous waste that significantly threatens water quality
- Class III – Accepts nonhazardous waste and inert material

10.3.2.7 Emergency Services Act

Under the California Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by all governmental agencies. The plan is administered by the California Office of Emergency Services (OES). The OES coordinates the responses of other agencies, including the EPA, the Federal Emergency Management Agency, the California Highway Patrol, RWQCBs, air quality management districts, and county disaster response offices. Local emergency response teams, including the fire, police, and sheriff's departments, provide most of the services to protect public health.

10.3.2.8 California Environmental Protection Agency

The CalEPA has been granted primary responsibility by the EPA for administering and enforcing hazardous materials management plans within the state of California. The CalEPA defines a hazardous material more generally than the EPA as a material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released (26 CCR 25501). Raw materials and products, such as bulk chemicals, stored and used at typical POTWs can be defined as a hazardous material per CalEPA regulations.

California state regulations governing hazardous materials are as stringent as, or in some cases, more stringent than, federal regulations. State regulations include detailed planning and management requirements to ensure that hazardous materials are properly handled, stored, and disposed of in order to reduce human health risks.

In particular, the state has acted to regulate the transfer and disposal of hazardous waste. Hazardous waste haulers are required to comply with regulations that establish numerous standards, including criteria for handling, documenting, and labeling the shipment of hazardous waste (26 CCR 25160 et seq.). Hazardous waste TSDFs are also highly regulated and must meet standard criteria for processing, containment, and disposal of hazardous materials (26 CCR 25220).

10.3.2.9 California Division of Oil, Gas, and Geothermal Resources

The California Division of Oil, Gas, and Geothermal Resources (DOGGR) regulates the drilling, maintenance, and plugging and abandonment of oil, gas, and geothermal wells in California by CCR Title 14, Division 2, Chapters 2 through 4. The project would be located within the administrative boundaries of the Torrance and Wilmington Oil Fields. Numerous active, idle, and abandoned wells are located within or near project boundaries (DOGGR 2003; 2005). The tunnel alignments presented in this document have been located specifically to minimize interference with active and idle wells. In the unlikely event that an abandoned oil well were encountered at a shaft site or during the tunnel boring, the

well would be re-abandoned in accordance with these regulations and the approval of the local DOGGR office. (DOGGR 2008.)

10.3.2.10 California Government Code Section 65962.5

California Government Code Section 65962 (a)(1) requires that the DTSC compile, update, and submit to the Secretary for Environmental Protection, at least annually, a list of all hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code. This list, commonly referred to as the Cortese List, is a compilation of sites designated by the SWRCB (LUST sites), the Integrated Waste Board (solid waste information system sites [SWF/LS]), and the DTSC (Cal-Sites). The list is no longer updated by the CalEPA. Below are the data resources that provide information regarding the facilities or sites identified as meeting Cortese List requirements:

- List of Hazardous Waste and Substances sites from the DTSC EnviroStor database.
- List of LUST sites by county and fiscal year from the SWRCB GeoTracker database.
- List of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit.
- List of active cease and desist orders (CDOs) and cleanup and abatement orders (CAOs) from the SWRCB.[3]
- List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code identified by the DTSC (CalEPA 2009).

10.3.3 Regional and Local

10.3.3.1 Los Angeles Municipal Code (Fire Protection – Chapter 5, Section 57, Divisions 4 and 5)

Divisions 4 and 5 of Chapter 5, Section 57, of the Los Angeles Municipal Code regulate the construction of buildings and other structures used to store flammable hazardous materials and the storage of these same materials. This ensures that businesses are properly equipped and operate in a safe manner and in accordance with all applicable laws and regulations. Permits required by the code are issued by the Los Angeles Fire Department.

10.3.3.2 Los Angeles Municipal Code (Public Property – Chapter 6, Article 4)

Chapter 6, Article 4, of the Los Angeles Municipal Code regulates the discharge of materials into the sanitary sewer and storm drains. It requires the construction of spill-containment structures to prevent the entry of forbidden materials, such as hazardous materials, into sanitary sewers and storm drains.

10.3.3.3 Sanitation Districts of Los Angeles County Standards

The Sanitation Districts perform numerous construction projects in various locations throughout the JOS service area, and are accustomed to encountering soil and groundwater that could be contaminated.

[3] Note that this list contains many CDOs and CAOs that do not concern the discharge of wastes that are hazardous materials. Many of the listed orders concern, for example, discharges of domestic sewage, food processing wastes, or sediment that do not contain hazardous materials, but the SWRCB's database does not distinguish between these types of orders. If there is a question about whether a specific order concerns the discharge of wastes that are hazardous materials, the applicable RWQCB should be contacted.

Therefore, standard best management practices (BMPs) are incorporated into all final design plans to guide the contractors on the proper testing, handling, transport, and disposal of contaminated soil and groundwater during site preparation, excavation, and earthwork. Any material deemed unsuitable during construction is tested and inspected prior to removal.

10.3.3.4 South Coast Air Quality Management District Rule 403

The purpose of Rule 403 (Fugitive Dust) is to reduce the amount of particulate matter entrained in the ambient air as a result of man-made dust sources by requiring actions to prevent, reduce, or mitigate dust emissions. This rule applies to any man-made condition capable of generating dust. General provisions of the rule include the following:

- Visible emissions are prohibited from crossing the site property line [Section (d)(1)(A)].
- At least one best available control measure must be implemented for each source [Section (d)(2)].
- The differential for upwind/downwind particulate matter equal to or less than 10 microns (PM_{10}) is prohibited from exceeding 50 micrograms per cubic meter [Section (d)(3)].

10.3.3.5 South Coast Air Quality Management District Rule 1166

Rule 1166 sets requirements to control the emission of VOCs when excavating, grading, handling, or treating certain contaminated soils. General provisions of the rule include the following:

- Prior to excavation, a mitigation plan approved by the executive officer must be obtained.
- The South Coast Air Quality Management District (SCAQMD) must be notified 24 hours prior to excavation.
- The excavation must be monitored at least once every 15 minutes commencing at the beginning of excavation or grading.
- Additional mitigation measures (e.g., spraying, covering, etc.) must be applied if VOCs exceed levels established by the rule.
- A site-specific plan is needed in the volume of contaminated soil exceeds 2,000 cubic yards.

10.3.4 Other Applicable Guidelines and Practices

10.3.4.1 Screening Guidelines for Contaminated Soil and Groundwater

When potentially contaminated sites are encountered during construction, it is necessary to assess if the chemical concentrations in the soil or groundwater exceed regulatory thresholds. Regional screening levels (RSLs) were developed by the EPA using risk assessment guidance from the EPA Superfund program and can be used for Superfund sites or as a reference for non-Superfund sites. They are risk-based concentrations derived from standardized equations combining exposure information assumptions with EPA toxicity data. RSLs are considered by the EPA to be protective for humans (including sensitive groups) over a lifetime; however, RSLs are not always applicable to a particular site and do not address non-human health endpoints, such as ecological impacts. The RSLs are generic and are calculated without site-specific information. They may be recalculated using site-specific data. RSLs are not clean-up standards. Clean-up standards are based on site-specific information and negotiation with state and local agencies, such as the SWRCB, the DTSC, and the Los Angeles County Fire Department.

The state of California Office of Environmental Health Hazard Assessment, on behalf of CalEPA, has developed screening values for 54 common hazardous substances that are typically found at brownfields sites (former industrial sites that are undeveloped). These screening values are known as California Human Health Screening Levels (CHHSLs). These values, which were developed using standard exposure assumptions and chemical toxicity values published by the EPA and Cal-EPA, serve as reference numbers to help developers and local governments estimate the costs and extent of cleanup of contaminated sites while protecting human health. CHHSLs were developed for soil, soil gas, and indoor air under residential and commercial/industrial exposure conditions.

10.4 Environmental Impacts and Mitigation Measures

10.4.1 Methodology and Assumptions

The potential impacts from program-related releases of hazardous materials into the environment, which could affect public health and safety, are qualitatively evaluated using existing federal, state, regional, and local regulations and policies.

The potential impacts from project-related releases of hazardous materials into the environment, which could affect public health and safety, are qualitatively evaluated based on:

- The potential presence of contaminated soils and groundwater as indicated in the feasibility report (Parsons 2011).
- Existing federal, state, regional, and local regulations and policies governing the assessment, handling, and disposal of contaminated soils and groundwater.

Analysis of risk of upset is based primarily on potential frequencies of occurrence for various events and upset conditions as established by historical data. The climate of the world today has added an additional unknown factor for consideration, i.e., terrorism. There are limited data available to indicate the likelihood of a terrorist attack aimed at utilities in the United States; therefore, the probability component of the hazards risk analysis contains a considerable amount of uncertainty. However, this lack of data does not invalidate the analysis contained herein. Terrorism can be viewed as a potential trigger that could initiate events described in this chapter such as hazardous materials release and/or explosion. The potential impact of those events, once triggered by whatever means, would remain as described herein.

The methodology assumes the majority of the excavated material resulting from site preparation, shaft construction, and tunneling would not be contaminated and, therefore, could be properly disposed of within approximately 50 miles of the shaft site.

The excavated material would be regularly tested in accordance with the methods outlined in EPA publication SW-846, as required by state and federal regulations and as directed by the accepting facility. Class III landfills, which can accept soils deemed to be nonhazardous, and material recyclers (construction-related scrap material) are readily available in the greater Los Angeles area. Class I and II landfills, which can accept soils that are non-RCRA and RCRA hazardous, are present in other nearby counties. For the purposes of this document, it is assumed that all of the contaminated excavated material would be disposed of within approximately 200 miles of the JOS service area.

10.4.1.1 Baseline

CEQA Baseline

The CEQA baseline includes hazardous materials conditions in existence in 2008 for all sites where program and project elements would be constructed.

NEPA No-Federal-Action Baseline

The National Environmental Policy Act (NEPA) no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the condition of resources at the year 2022 when construction of project elements under the U.S. Army Corps of Engineers' (Corps') jurisdiction would conclude.

The NEPA baseline is the hazardous materials conditions in existence in 2008 for all sites where project elements would be constructed as described in this chapter. No reliable information concerning future hazards or hazardous materials are available, and no reliable future projections can be made to this effect. As a result, the NEPA no-federal-action baseline is the same as the CEQA baseline. The NEPA baseline may change if unknown hazards or hazardous conditions are encountered during construction.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

10.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for hazards and hazardous materials (HAZ):

HAZ-1. Creates a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

HAZ-2. Is located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, creates a significant hazard to the public or the environment.

HAZ-3. Creates a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

HAZ-4. Emits hazardous emissions or involves handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.

HAZ-5. Results in a substantial spill, release, or explosion of hazardous material(s) due to a terrorist action.

HAZ-6. Exposes people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts with respect to hazards and hazardous materials before mitigation. Table 10-4 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 10-4 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 10-4. Thresholds Evaluated

		Threshold					
	Alt.	**HAZ-1**	**HAZ -2**	**HAZ -3**	**HAZ -4**	**HAZ -5**	**HAZ -6**
Program Element							
SJCWRP Plant Expansion	1–5	X		X		X	
Project Element							
Wilmington to SP Shelf (onshore tunnel)[a]	1,2	X		X			
Wilmington to SP Shelf (offshore tunnel)	1	X		X			
Wilmington to PV Shelf (onshore tunnel)[a]	1,2	X		X			
Wilmington to PV Shelf (offshore tunnel)	2	X		X			
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3	X		X			
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3	X		X			
Figueroa/Western to Royal Palms (onshore tunnel)	4	X		X			
JWPCP East Shaft Site	1,2	X	X	X	X		
TraPac Shaft Site	1,2	X		X			
LAXT Shaft Site	1,2	X		X			
Southwest Marine Shaft Site	1,2	X		X			
JWPCP West Shaft Site	3,4	X		X			
Angels Gate Shaft Site	3	X		X			
Royal Palms Shaft Site	4	X		X			

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
Alt. = alternative

For a detailed discussion of impacts associated with hazards and hazardous materials resulting from construction and operation of the riser and diffuser and the existing ocean outfalls, refer to Chapter 13.

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears.

10.4.3 Alternative 1

10.4.3.1 Program

Impact HAZ-1. Would Alternative 1 (Program) create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

San Jose Creek Water Reclamation Plant – Plant Expansion

Operation

Currently, the SJCWRP uses chlorine to disinfect wastewater effluent. Operation of the expansion of the SJCWRP would result in about 35 additional truck deliveries per year of chlorine. Per existing regulations, the CalARP RMP would be updated accordingly after plant expansion to reflect the additional volume of chlorine that would be transported, used, or disposed of. Added transport, use, or disposal of sulfur dioxide and aqueous ammonia would also require implementation of a revised CalARP RMP. As part of revising the CalARP RMP, the Sanitation Districts would evaluate if current containment systems would be adequate for the additional truck deliveries, and make any necessary modification. Impacts would be less than significant.

CEQA Impact Determination

Operation of Alternative 1 (Program) would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HAZ-3. Would Alternative 1 (Program) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

San Jose Creek Water Reclamation Plant – Plant Expansion

Operation

Currently, the SJCWRP uses chlorine to disinfect wastewater effluent. Operation of the expansion of the SJCWRP would increase the volume of chlorine used on site by approximately 33 percent. The transportation of the increased volume of chlorine would be required to comply with the Hazardous Materials Transportation Act and would be transported in a safe and controlled manner similar to how the chlorine is currently transported. Furthermore, as discussed in Impact HAZ-1, the CalARP RMP would be updated to reflect the additional volume of chlorine that would be transported, used, or disposed of. The process for revising the CalARP RMP would include the evaluation of security and prevention measures so that operation of the SJCWRP would not result in reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment through the increased use of

chlorine for disinfection. Any recommended upgrades or procedural changes would be implemented prior to receiving additional truck deliveries. Impacts would be less than significant.

CEQA Impact Determination

Operation of Alternative 1 (Program) would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HAZ-5. Would Alternative 1 (Program) result in a substantial spill, release, or explosion of hazardous material(s) due to a terrorist action?

San Jose Creek Water Reclamation Plant – Plant Expansion

Operation

Currently, the SJCWRP uses chlorine to disinfect wastewater effluent. Operation of the expansion of the SJCWRP would increase the volume of chlorine used on site. When large volumes of hazardous materials are proposed, the risk of terrorism must be considered. The risk of terrorism can be generally defined by the combination of three factors:

- Threat of a terrorist action (which includes the likelihood of action)
- Vulnerability of a particular facility to a terrorist action
- Consequence(s) of a terrorist action

There are limited data available to indicate how likely or unlikely a terrorist action aimed at the utility infrastructure of Southern California or the SJCWRP expansion would be. Therefore, the probability component of a risk analysis of terrorism contains considerable amount of uncertainty. However, the amount of hazardous materials transported, used, and stored at the SJCWRP as compared to other facilities in the region (e.g., oil refineries, bleach manufacturing facilities, fuel depots, etc.) is relatively small. Furthermore, the SJCWRP would not be considered a high-profile infrastructure target, such as a dam, which could result in massive flooding and damage if destroyed, or a power plant, which could result in economic hardship and loss.

The remaining two components related to the risk of terrorism – vulnerability and consequences – could be qualitatively defined and evaluated within the context of a release, spill, or explosion of hazardous materials.

The vulnerability of activities at the SJCWRP can be described within the context of the procedures and policies in place to specifically safeguard the SJCWRP and the employees against an accidental release or spill of the increased amount of chlorine used at the wastewater treatment facility due to a terrorist action. Chlorine and sulfur dioxide are secured in a concrete building with restricted access and mitigation systems designed to handle any releases, and this building is located within a facility with 24-hour staffing, security fencing, and electronic surveillance. Employees with access into the containment building are specifically trained on the hazards associated with handling these chemicals. All employees

working at the SJCWRP have security badges. Transporters of hazardous materials must be licensed and registered with the state government. Given the extent of security systems that are and would be in place, the operation of the expansion of the SJCWRP would not substantially increase or contribute to the vulnerability of a terrorist action on the project site or adjacent land uses.

Similarly, the environmental consequences of a terrorist action, including threat to human health arising from the release, explosion, or spill of hazardous materials, would remain relatively the same for the expansion when compared to existing conditions. First, the expansion would not increase the number of employees at the SJCWRP, so there would be an equal number of people under future conditions that could be exposed to a spill of chlorine as under existing conditions. Second, the expected consequences of a terrorist action can be reduced by certain measures, such as existing hazardous materials regulations and requirements (e.g., CalARP RMP). Furthermore, any hazardous materials at the expansion site would be stored subject to the applicable state and federal laws and in accordance with the Los Angeles County Fire Department; these laws are designed to (1) prevent hazardous materials spills, releases, and explosions; and (2) reduce the consequences of a hazardous material spill, release, or explosion.

Therefore, overall, the operation of the expansion of the SJCWRP would not result in the release of hazardous materials into the environment due to a terrorist action. Impacts would be less than significant.

CEQA Impact Determination

Operation of Alternative 1 (Program) would not result in a substantial spill, release, or explosion of hazardous material(s) due to a terrorist action. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

10.4.3.2 Project

Impact HAZ-1. Would Alternative 1 (Project) create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

The Wilmington to SP Shelf onshore tunnel alignment would extend from the JWPCP East shaft site to the TraPac shaft site. Onshore tunneling activities would generate a large volume of excavated material that could consist of a bentonite slurry, depending on the tunneling method used. A bentonite slurry would itself not be considered hazardous waste because it does not have any of the RCRA hazardous waste characteristics. However, if tunneling advanced through contaminated soil or groundwater, the excavated soil/slurry mix could be considered hazardous, depending on the levels of contamination encountered. If the soil/slurry were deemed hazardous, it would be handled and transported in strict accordance with federal, state, and local requirements to minimize the impact on human health and the environment, as detailed in Section 10.3. Depending on the levels of soil contamination, it is possible that the soil/slurry would be disposed of at a Class III municipal landfill. However, the soil/slurry would be

profiled to determine disposal options that are in compliance with applicable federal and state guidelines and regulations.

During construction, only a few hazardous materials would be located within the onshore tunnel. These hazardous materials would consist primarily of diesel fuel (to power the locomotives used to transport employees and materials), small quantities of lubricants and solvents, and, possibly, the slurry used during tunneling. Slurry has the potential to be considered hazardous only if it comes in contact with contaminated soil and/or groundwater. Slurry would be completely contained within tubing or piping until it exited the tunnel at the shaft site. The tunnel boring machine (TBM) would be electric, and solvents and lubricants would be used during the maintenance of the TBM and support equipment.

Due to the anticipated small quantities of hazardous materials present in the tunnel during construction, and their limited potential to affect human health and the environment, there are no strict regulations related to their use and storage. The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

The Wilmington to SP Shelf offshore tunnel alignment would extend from the TraPac shaft site, through the LAXT and the Southwest Marine shaft sites, to the SP Shelf. Offshore tunneling activities would be similar to those conducted onshore; however, there would be less likelihood of tunneling through contaminated soil and/or groundwater in the offshore portions of the tunnel than in the onshore portions because there are fewer contaminated sites located along the offshore alignment. In the event that contaminated soil or groundwater were encountered during offshore tunneling operations, the excavated soil/slurry would be handled in the same manner as described for the onshore tunnel alignment.

During construction, only a few hazardous materials would be located within the offshore tunnel itself. Conditions and hazardous materials located within the offshore tunnel would be the same as described for the onshore tunnel alignment.

Due to the anticipated small quantities of hazardous materials used, and their limited potential to affect human health and the environment, there are no strict regulations related to their use and storage. The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Site – JWPCP East

Construction

CEQA Analysis

The transport, use, and disposal of hazardous materials during construction of the JWPCP East shaft site would be related to the handling of contaminated soils and groundwater and the use of fuels and lubricants. The JWPCP East shaft site is near Interstate (I-) 110; therefore, ADL and asbestos in surface soils are likely to be present due to vehicle emissions that occurred prior to the use of unleaded fuel and asbestos-free brake pads. There are at least five abandoned oil wells in the property, which was previously owned by FORCO. The site is under remediation to remove VOCs and petroleum products from the soil and groundwater. Even with completion of site remediation and issuance of regulatory closure, small pockets of residual soil contamination could be encountered during shaft construction. In the event that contaminated soils are encountered, the assessment, handling, and disposal would be conducted in strict compliance with federal, state, and local regulations (see Section 10.3).

The JWPCP East shaft would be excavated through alluvial deposits, which generally contain shallow, unconfined aquifers and deeper confined units. The shaft would penetrate the unconfined water-bearing zone that could potentially contain contamination related to previous site operations or from operations in the vicinity of the site.

There are several methods proposed for the construction of the shaft (Parsons 2011). Each method would require heavy construction equipment (e.g., crane, excavator, slurry/cement pumps), the operation and maintenance of which would involve the use and handling of hazardous materials, including diesel fuel, gasoline, lubricants, and solvents (Parsons 2011). These hazardous materials would be used and stored within the area designated for shaft and tunnel support and laydown areas. Diesel fuel would be used to power the equipment and would be present in the fuel tanks of the individual pieces of equipment and potentially in larger quantity storage tanks used to refuel the equipment. Additionally, during construction of the shaft and the tunnel, small quantities of lubricants and solvents would be stored in the support area for maintenance of construction equipment. The quantities of hazardous materials could exceed regulatory thresholds and thus require handling and storage in accordance with federal, state, or local regulations. The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations.

Excavated material (e.g., soil, slurry, and groundwater) has the potential to be considered hazardous and would be monitored and tested at the shaft site prior to disposal. If excavated material were deemed hazardous, it would be subject to strict federal, state, and local regulations (e.g., permit to operate, NPDES permit). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – TraPac

Construction

CEQA Analysis

The transport, use, and disposal of hazardous materials during construction of the TraPac shaft site would be related to the handling of contaminated soils and groundwater and the use of fuels and lubricants. The TraPac shaft site is located about 0.42 mile from the I-110 freeway; therefore, ADL and asbestos in surface soils could be present due to vehicle emissions that occurred prior to the use of unleaded fuel and asbestos-free brake pads. The EDR database identified two sites that have the potential to affect groundwater in the immediate vicinity of the TraPac shaft site. Both sites report petroleum-based discharges from LUSTs (Parsons 2011). The TraPac shaft would be excavated through alluvial deposits, which generally contain shallow, unconfined aquifers and deeper confined units. The shaft would penetrate the unconfined water-bearing zone that could potentially contain contamination related to operations in the vicinity of the site.

While there is no evidence of contaminated soil or groundwater beneath the site, it is possible that unidentified/undocumented soil and groundwater contamination exists and could be encountered during shaft construction. Excavated material would be monitored and tested at the shaft site prior to disposal. If contaminated material were encountered and deemed hazardous, it would be subject to strict federal, state, and local regulations (e.g., permit to operate, NPDES permit). Additionally, the use of heavy construction equipment and procedures to minimize the risk of hazardous materials spills would be the same as described for the JWPCP East shaft site. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – LAXT

Construction

CEQA Analysis

The routine transport, use, and disposal of hazardous materials during construction of the LAXT shaft site would be related to the handling of contaminated soils and groundwater and the routine use of fuels and lubricants. The LAXT site was formerly used for the storage and export of coal and petroleum coke, and the shaft site appears to be covered with coal or coke dust, which can contain carcinogenic SVOCs (Parsons 2011). The EDR database identified four sites within 0.25 mile of the LAXT shaft site, and there is a potential for groundwater migration. The LAXT shaft would be excavated through alluvial deposits, which generally contain shallow, unconfined aquifers and deeper confined units. The shaft would penetrate the unconfined water-bearing zone that could potentially contain contamination related to previous site operations or from operations in the vicinity of the site.

Excavated material (e.g., soil, slurry, and groundwater) has the potential to be considered hazardous and would be monitored and tested at the shaft site prior to disposal. If excavated material were deemed hazardous, it would be subject to strict federal, state, and local regulations (e.g., permit to operate, NPDES permit). Additionally, the use of heavy construction equipment and procedures to minimize the

risk of hazardous materials spills would be the same as described for the JWPCP East shaft site. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Southwest Marine

Construction

CEQA Analysis

The routine transport, use, and disposal of hazardous materials during construction of the Southwest Marine shaft site would be related to the handling of contaminated soils and groundwater and the routine use of fuels and lubricants. The Southwest Marine shaft site is part of the Southwest Marine ship building complex, which has a history of hazardous materials use. Although this site was not listed in the environmental database search, PCBs and heavy metals contamination is reportedly present in the soils at Berth 240 and the Southwest Marine ship building complex (Parsons 2011). PCBs and heavy metals are relatively insoluble in most soil conditions and thus are not mobile in the soil. Therefore, when released to the soil, the PCBs and heavy metals tend to stay in the upper portion of the soil profile and do not readily dissolve into the groundwater. Given the physical and chemical characteristics of these contaminants and the fact that the shaft would be a vertical structure, large volumes of contaminated soil would not be expected at this shaft site. Furthermore, the soil boring conducted on the shaft site indicated no contamination was present.

The Southwest Marine shaft would be excavated through alluvial deposits, which generally contain shallow, unconfined aquifers and deeper confined units. The shaft would penetrate the unconfined water-bearing zone that could potentially contain contamination related to previous site operations or from operations in the vicinity of the site.

Excavated material (e.g., soil, slurry, and groundwater) has the potential to be considered hazardous and would be monitored and tested at the shaft site prior to disposal. If excavated material were deemed hazardous, it would be subject to strict federal, state, and local regulations (e.g., permit to operate, NPDES permit). Additionally, the use of heavy construction equipment and procedures to minimize the risk of hazardous materials spills would be the same as described for the JWPCP East shaft site. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 1 (Project) would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact HAZ-2. Would Alternative 1 (Project) be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?

Shaft Site – JWPCP East

Construction

CEQA Analysis
The JWPCP East shaft site would be located on the former FORCO property, which is under remediation to remove VOCs and petroleum products that are affecting the groundwater and soil (Parsons 2011). The FORCO site is on the Cortese list, and residual contaminated soil and groundwater associated with the FORCO site has the potential to create a hazard during shaft construction. The Brea Canyon Oil Company spill, which occurred adjacent to the site, is also on the Cortese list. Pre-construction assessment would be conducted at the shaft site to determine if residual contaminant concentrations are above RSL or CHHSL thresholds, as discussed in Section 10.3. If contamination were found that exceeded threshold levels, measures that comply with Cal/OSHA regulations would then be employed to ensure worker and public safety during construction. If material excavated during shaft construction were deemed hazardous, it would be subject to strict federal, state, and local regulations (e.g., permit to operate, NPDES permit). Impacts on the public and the environment would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction of Alternative 1 (Project) would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 but would not create a significant hazard to the public or the environment. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 1 (Project) would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 but would not create a significant hazard to the public or the environment. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact HAZ-3. Would Alternative 1 (Project) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis
The Wilmington to SP Shelf onshore tunnel alignment would extend from the JWPCP East shaft site to the TraPac shaft site. Potential impacts on the public or the environment would be related to the upset or accidental release of hazardous materials from the soil/slurry conveyance system, an upset or accidental release of hazardous materials (e.g., fuels, lubricants, and solvents), and an upset or accidental release associated with encountering undocumented oil wells.

Onshore tunneling activities would generate a large volume of excavated material that could consist of a bentonite slurry, depending on the tunneling method used. A bentonite slurry would itself not be considered hazardous waste because it does not have any of the RCRA hazardous waste characteristics. However, if tunneling advanced through contaminated soil or groundwater, the excavated soil/slurry mix could be considered hazardous depending on the levels of contamination encountered. An upset or accidental release from the conveyance system would be responded to immediately, would be of small quantity, and would be contained within the tunnel. Spill response activities would include transport of hazardous materials out of the tunnel for disposal in accordance with federal, state, and local regulations.

During construction, only a few hazardous materials would be located within the onshore tunnel. These hazardous materials would consist primarily of diesel fuel (to power the locomotives used to transport employees and materials), small quantities of lubricants and solvents, and, possibly, the slurry used during tunneling. Slurry has the potential to be considered hazardous only if it comes in contact with contaminated soil and/or groundwater. Slurry would be completely contained within tubing or piping until it exited the tunnel at the shaft site. The TBM would be electric, and solvents and lubricants would be used during the maintenance of the TBM and support equipment.

In an effort to avoid active and idle oil wells, the onshore tunnel alignment generally would follow historically established rights of way; therefore, the likelihood of encountering active or idle oil wells would be relatively low. Historic abandoned oil wells could be encountered and could result in the vertical migration of oil, natural gas, H_2S, or drilling fluids into excavated soils, fluids, and ventilation exhaust. It is likely that no perceivable change in tunneling operations would be noticed if abandoned oil wells were encountered by the TBM; however, because the tunnel could be located in a potentially gaseous environment, the excavated material generated by tunneling activities would be monitored to assess worker safety and allow for proper handling and disposal of any contaminated material. If monitoring indicated contaminated soil or fluids were present, they would be handled and disposed of in accordance with federal, state, and local regulations described in Section 10.3. If a well casing were severed by the TBM, the casing would be sealed off as the tunnel lining is grouted, which would prevent seepage.

Any upset or accidental releases from the soil/slurry conveyance system would be small and contained within the tunnel; releases associated with the use of hazardous materials (e.g., fuels, lubricants, and solvents) would be small and contained; and potential releases from oil wells would be contained within the soil/slurry conveyance system. As previously discussed, if contaminated soil or fluids were present, they would be handled and disposed of in accordance with federal, state, and local regulations described in Section 10.3. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

The Wilmington to SP Shelf offshore tunnel alignment would extend from the TraPac shaft site, through the LAXT and Southwest Marine shaft sites, to the SP Shelf. Offshore tunneling activities would be similar to those conducted onshore; however, there would be less likelihood of tunneling through contaminated soil and/or groundwater in the offshore portions of the tunnel than in the onshore portions because there are fewer contaminated sites located along the offshore alignments.

As discussed in the evaluation of the onshore section of the Wilmington to SP Shelf tunnel alignment, any upset or accidental releases from the soil/slurry conveyance system would be small and contained within the tunnel, releases associated with the use of hazardous materials (e.g., fuels, lubricants, and solvents) would be small and contained, and potential releases from oil wells would be contained within the soil/slurry conveyance system. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Site – JWPCP East

Construction

CEQA Analysis

Potential impacts on the public or the environment would be related to the upset or accidental release of contaminated soil or groundwater generated during construction of the shaft, upset or accidental release of hazardous materials (e.g., fuels, lubricants, and solvents), and the upset or accidental release associated with encountering undocumented oil wells.

The JWPCP East shaft site is near I-110; therefore, ADL and asbestos in surface soils are likely to be present due to vehicle emissions that occurred prior to the use of unleaded fuel and asbestos-free brake pads. Additionally, the site, which was previously owned by FORCO, is under remediation to remove VOCs and petroleum products from the soil and groundwater. Even with completion of site remediation and issuance of regulatory closure, small pockets of residual soil contamination could be encountered during shaft construction. In the event that contaminated soils were encountered, the assessment, handling, and disposal would be conducted in strict compliance with federal, state, and local regulations (see Section 10.3). The removal, transport, and disposal of any contaminated groundwater or soil would follow requirements discussed in Section 10.3; therefore, there would be a low probability of upset or accidental release during the removal, transport, and disposal of contaminated groundwater or soils. Furthermore, if a spill or release of contaminated soil or groundwater were to occur, it would be localized and contained immediately and would not pose a significant hazard to the public or environment.

Although construction-related spills of fuels, lubricating fluids, solvents, and other hazardous materials are not uncommon, the potential consequences of such accidents are generally small due to the localized, short-term nature of the releases. The volume of spills likely would be relatively small; the volume in any single vehicle or container would generally be less than 50 gallons, and fuel trucks would be limited to 10,000 gallons or less.

Additionally, quantities of hazardous materials that exceed the thresholds provided in Chapter 6.95 of the California Health and Safety Code would be subject to a release response plan (RRP) and an HMI. Federal and state regulations that govern the storage of hazardous materials in containers (i.e., the types of materials and the size of packages containing hazardous materials) and the separation of containers holding hazardous materials would limit the potential adverse effects of contamination to a relatively small area. As such, all hazardous materials utilized during construction of the JWPCP East shaft site would be used and stored in compliance with applicable state and federal requirements.

The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations. Runoff control requirements are discussed in detail in Chapter 11. Furthermore, through adherence to federal, state, and local regulations discussed in Section 10.3, impacts resulting from reasonably foreseeable upset and accident conditions would be minimized.

There are at least five abandoned oil wells at the JWPCP East shaft site, which was previously owned by FORCO. However, the shaft would be sited to avoid existing wells if feasible. If avoiding a well were infeasible, the well would be properly abandoned consistent with DOGGR requirements prior to shaft construction, or remedial plugging of undocumented wells would be conducted.

As previously discussed, upset or accidental releases associated with the removal, transport, and disposal of contaminated groundwater or soil would follow the requirements discussed in Section 10.3; the use and transport of hazardous materials (e.g., fuels, lubricants, and solvents) would be of a small quantity and

contained within the shaft; and potential releases from oil wells would be avoided by adjusting the shaft location or abandonment prior to shaft construction. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

The analysis and impacts for the construction of the TraPac, LAXT, and Southwest Marine shaft sites would be the same as described for the JWPCP East shaft site. However, unlike the JWPCP East shaft site, the TraPac, LAXT, and Southwest Marine shaft sites have no documented onsite contamination; therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HAZ-4. Would Alternative 1 (Project) emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

Shaft Site – JWPCP East

Construction

CEQA Analysis

The JWPCP East shaft site is located within 0.25 mile of an existing school. The school is located southeast of this shaft site. Construction-related traffic and site ingress and egress would be to the north and west ends of the site through the existing JWPCP facilities. The handling of hazardous or acutely hazardous materials, substances, or waste would be related to the excavation of contaminated soil or groundwater or the use of hazardous materials (e.g., fuels, lubricants, and solvents).

The JWPCP East shaft site is near I-110; therefore, ADL and asbestos in surface soils are likely to be present due to vehicle emissions that occurred prior to the use of unleaded fuel and asbestos-free brake pads. Additionally, the site, which was previously owned by FORCO, is under remediation to remove VOCs and petroleum products from the soil and groundwater. Even with completion of site remediation and issuance of regulatory closure, small pockets of residual soil contamination could be encountered during shaft construction.

Monitoring and abatement of VOCs, which are vapor forms of some common industrial pollutants, and fugitive dust (non-controlled dust emissions) associated with the excavation of contaminated soil are required by SCAQMD Rules 1166 and 403; these rules are discussed in more detail in Section 10.3. Compliance with these rules would minimize the potential for receptors (students and workers) at nearby schools and other sensitive receptors, such as terrestrial and marine wildlife, to be exposed to these constituents.

The handling of hazardous materials would include the use and transport of diesel fuel, gasoline, lubricants, and solvents. These hazardous materials would be used and stored within the shaft site. Diesel fuel would be used to power equipment and would be present in the fuel tanks of the individual pieces of equipment and potentially in larger quantity storage tanks used to refuel the equipment tanks. Additionally, during construction of the shaft and the tunnel, small quantities of lubricants and solvents would be stored in the support area for maintenance of construction equipment. The quantity of hazardous material could exceed regulatory thresholds, thus requiring handling and storage in accordance with federal, state, or local regulations. The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations.

Hazardous waste (e.g., contaminated soil, groundwater, slurry) would be handled in accordance with the regulations discussed in Section 10.3 of this chapter and could involve stockpiling of contaminated soils on site. Stockpiles would be managed in accordance with Rules 1166 and 403 to minimize potential exposure to VOCs and fugitive dust. Furthermore, access to the shaft site would be controlled through the use of fencing and controlled access locations.

As previously discussed, the potential impacts associated with emissions of VOCs and fugitive dust and handling of hazardous materials would be minimized by adhering to regulations presented in Section 10.3. The use and storage of hazardous materials would follow the requirements discussed in Section 10.3; therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school; however, this would not result in a significant impact. Adherence to regulations, implementation of BMPs, and site controls would minimize exposure to emissions. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school; however, this would not result in a significant impact. Adherence to regulations, implementation of BMPs, and site controls would minimize exposure to emissions. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

10.4.3.3 Impact Summary – Alternative 1

Impacts on hazards and hazardous materials analyzed in this EIR/EIS for Alternative 1 are summarized in Table 10-5 and Table 10-6. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 10-5. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact HAZ-1. Would Alternative 1 (Program) create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact HAZ-3. Would Alternative 1 (Program) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact HAZ-5. Would Alternative 1 (Program) result in a substantial spill, release, or explosion of hazardous material(s) due to a terrorist action?			
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 10-6. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HAZ-1. Would Alternative 1 (Project) create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 10-6 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HAZ-2. Would Alternative 1 (Project) be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HAZ-3. Would Alternative 1 (Project) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 10-6 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HAZ-4. Would Alternative 1 (Project) emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

10.4.4 Alternative 2

10.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

10.4.4.2 Project

The impacts for the onshore tunnel and the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact HAZ-1. Would Alternative 2 (Project) create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

The Wilmington to PV Shelf offshore tunnel alignment would extend from the TraPac shaft site, through the LAXT and Southwest Marine shaft sites, to the PV Shelf. Offshore tunneling activities would be similar to those conducted onshore (see Alternative 1 [Project]); however, there would be less likelihood of tunneling through contaminated soil and/or groundwater in the offshore portions of the tunnel than in the onshore portions because there are fewer contaminated sites located along the offshore alignments. In the event that contaminated soil or groundwater were encountered during offshore tunneling operations, the excavated soil/slurry would be handled in the same manner described for the onshore tunnel alignment under Alternative 1 (Project).

During construction, only a few hazardous materials would be located within the offshore tunnel. These hazardous materials would consist primarily of diesel fuel (to power the locomotives used to transport employees and materials), small quantities of lubricants and solvents, and, possibly, the slurry used during tunneling. Slurry has the potential to be considered hazardous only if it comes in contact with contaminated soil and/or groundwater. Slurry would be completely contained within tubing or piping until it exited the tunnel at the shaft site. The TBM would be electric, and solvents and lubricants would be used during the maintenance of the TBM and support equipment.

Due to the anticipated small quantities of hazardous materials used and their limited potential to affect human health and the environment, there are no strict regulations related to their use and storage. The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 2 (Project) would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 2 (Project) would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact HAZ-3. Would Alternative 2 (Project) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
The Wilmington to PV Shelf offshore tunnel alignment would extend from the TraPac shaft site, through the LAXT and Southwest Marine shaft sites, to the PV Shelf. Offshore tunneling activities would be similar to those conducted onshore (see Alternative 1 [Project]); however, there would be less likelihood of tunneling through contaminated soil and/or groundwater in the offshore portions of the tunnel than in the onshore portions because there are fewer contaminated sites located along the offshore alignments.

As discussed in the evaluation of the onshore segment of Alternative 1 (Project), upset or accidental releases from the soil/slurry conveyance system would be small and contained within the tunnel, releases associated with the use of hazardous materials (e.g., fuels, lubricants, and solvents) would be small and contained, and potential releases from oil wells would be contained within the soil/slurry conveyance system. Therefore, impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination
Construction of Alternative 2 (Project) would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 2 (Project) would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

10.4.4.3 Impact Summary – Alternative 2

Impacts on hazards and hazardous materials for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 10-5. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 10-7. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 10-7. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HAZ-1. Would Alternative 2 (Project) create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 10-7 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HAZ-2. Would Alternative 2 (Project) be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HAZ-3. Would Alternative 2 (Project) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 10-7 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HAZ-4. Would Alternative 2 (Project) emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

10.4.5 Alternative 3

10.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

10.4.5.2 Project

Impact HAZ-1. Would Alternative 3 (Project) create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

The Figueroa/Gaffey to PV Shelf onshore tunnel alignment would extend from the JWPCP West shaft site to the Angels Gate shaft site. Although this alignment passes within 0.25 mile of the DFSP, there would be a low risk of contamination during tunnel construction because the tunnel would be constructed below the depth of contaminated groundwater documented on site (see Section 10.2.2.1).

Onshore tunneling activities would generate a large volume of material. If a slurry TBM were utilized, the bentonite slurry would not be considered hazardous waste because it does not have any of the RCRA hazardous waste characteristics. However, if tunneling advanced through contaminated soil or groundwater, the soil/slurry could be considered hazardous, depending on the levels of contamination encountered. If the soil/slurry were deemed hazardous, it would be handled and transported in strict accordance with federal, state, and local requirements to minimize the impact on human health and the environment, as detailed in Section 10.3. Depending on the levels of soil contamination, it is possible that the soil/slurry would be disposed of at a Class III municipal landfill. However, the soil/slurry would be profiled to determine disposal options that are in compliance with applicable federal and state guidelines and regulations.

During construction, only a few hazardous materials would be located within the onshore tunnel. These hazardous materials would consist primarily of diesel fuel (to power the locomotives used to transport employees and materials), small quantities of lubricants and solvents, and, possibly, the slurry used during tunneling. Slurry has the potential to be considered hazardous only if it comes in contact with contaminated soil and/or groundwater. Slurry would be completely contained within tubing or piping until it exited the tunnel at the shaft site. The TBM would be electric, and solvents and lubricants would be used during the maintenance of the TBM and support equipment.

Due to the anticipated small quantities of hazardous materials present in the tunnel and their limited potential to affect human health and the environment, there are no strict regulations related to their use and storage. The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

The Figueroa/Gaffey to PV Shelf offshore tunnel alignment would extend from the Angels Gate shaft site to the PV Shelf. Offshore tunneling activities would be similar to those conducted onshore; however, there would be less likelihood of tunneling through contaminated soil and/or groundwater in the offshore portions of the tunnel than in the onshore portions because there are fewer contaminated sites located along the offshore alignments.

Conditions and hazardous materials located within the offshore tunnel would be the same as described for the onshore tunnel alignment.

Due to the small quantities of hazardous materials used, and their limited potential to affect human health and the environment, there are no strict regulations related to their use and storage. The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Site – JWPCP West

Construction

CEQA Analysis

The routine transport, use, and disposal of hazardous materials during construction of the JWPCP West shaft site would be related to the handling of contaminated soils and groundwater and the routine use of fuels and lubricants. The JWPCP West shaft site is near I-110. ADL and asbestos on surface soils are likely due to vehicle emissions that occurred prior to the use of unleaded fuel and asbestos-free brake pads. The site does not have a history of contamination, and there are no records of contaminated soil or groundwater. There are several oil wells associated with this property, which is located within the Wilmington Oil Field.

The JWPCP West shaft would be excavated through alluvial deposits, which generally contain shallow, unconfined aquifers and deeper confined units. The shaft would penetrate the unconfined water-bearing zone that could potentially contain contamination related to operations near the site.

There are several methods proposed for the construction of the shaft (Parsons 2011). Each method would require heavy construction equipment (e.g., crane, excavator, slurry/cement pumps) whose operation and maintenance would involve the use and handling of hazardous materials, including diesel fuel, gasoline, lubricants, and solvents. These hazardous materials would be used and stored within the area designated for shaft and tunnel support and laydown areas. Diesel fuel would be used to power the equipment and would be present in the fuel tanks of the individual pieces of equipment and potentially in larger quantity storage tanks used to refuel the equipment. Additionally, during construction of the shaft and the tunnel, small quantities of lubricants and solvents would be stored in the support area for maintenance of

construction equipment. The quantities of hazardous materials may exceed regulatory thresholds and thus require handling and storage in accordance with federal, state, or local regulations. The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations.

While there is no evidence of contaminated soil or groundwater beneath the site or sites in the immediate vicinity, it is possible that unidentified/undocumented soil and groundwater contamination exists and could be encountered during shaft construction. Excavated material would be monitored and tested at the shaft site prior to disposal. If contaminated material were encountered and deemed hazardous, it would be subject to strict federal, state, and local regulations (e.g., permit to operate, NPDES permit). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

The routine transport, use, and disposal of hazardous materials during construction of the Angels Gate shaft site would be related to the handling of contaminated soils and groundwater and the routine use of fuels and lubricants. The Angels Gate site is surrounded by parkland and is a portion of the former Fort MacArthur Military Reservation. No records of soil or groundwater contamination were reported at the Angels Gate shaft site, and no historic records of commercial or industrial activities were found. The Angels Gate shaft would be excavated through fluvial deposits (in the upper 20 feet) and bedrock (predominantly shales). The fluvial deposits could contain shallow, unconfined, or perched water-bearing zones. The shale units below the fluvial deposits are most likely not water bearing, but may contain lenses of water if the units are adequately deformed and fractured.

While there is no evidence of contaminated soil or groundwater beneath the site, it is possible that unidentified/undocumented soil and groundwater contamination exists and could be encountered during shaft construction. Excavated material would be monitored and tested at the shaft site prior to disposal. If contaminated material were encountered and deemed hazardous, it would be subject to strict federal, state, and local regulations. Additionally, the use of heavy construction equipment and procedures to minimize the risk of hazardous materials spills would be the same as described for the JWPCP East shaft site. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HAZ-3. Would Alternative 3 (Project) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

The Figueroa/Gaffey to PV Shelf onshore tunnel alignment would extend from the JWPCP West shaft site to the Angels Gate shaft site. Potential impacts on the public or the environment would be related to the upset or accidental release of hazardous material from the soil/slurry conveyance system and an upset or accidental release of hazardous materials (e.g., fuels, lubricants, and solvents).

Onshore tunneling activities would generate a large volume of material. If a slurry TBM were utilized, the bentonite slurry would not be considered hazardous waste because it does not have any of the RCRA hazardous waste characteristics. However, if tunneling advances through contaminated soil or groundwater, the excavated material could be considered hazardous depending on the levels of contamination encountered. An upset or accidental release from the conveyance system would be responded to immediately, would be of small quantity, and would be contained within the tunnel. Spill response activities would include transport of hazardous materials out of the tunnel for disposal in accordance with federal, state, and local regulations.

During construction, only a few hazardous materials would be located within the onshore tunnel. These hazardous materials would consist primarily of diesel fuel (to power the locomotives used to transport employees and materials), small quantities of lubricants and solvents, and, possibly, the slurry used during tunneling. Slurry has the potential to be considered hazardous only if it comes in contact with contaminated soil and/or groundwater. Slurry would be completely contained within tubing or piping

until it exited the tunnel at the shaft site. The TBM would be electric, and solvents and lubricants would be used during the maintenance of the TBM and support equipment.

As previously discussed, any upset or accidental releases from the soil/slurry conveyance system would be small and contained within the tunnel; releases associated with the use of hazardous materials (e.g., fuels, lubricants, and solvents) would be small and contained; and potential releases from oil wells would be contained within the soil/slurry conveyance system. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

The Figueroa/Gaffey to PV Shelf offshore tunnel alignment would extend from the Angels Gate shaft site to the PV Shelf. Offshore tunneling activities would be similar to those conducted onshore; however, there would be less likelihood of tunneling through contaminated soil and/or groundwater in the offshore portions of the tunnel than in the onshore portions because there are fewer contaminated sites located along the offshore alignments.

As previously discussed in the evaluation of the onshore segment of the Figueroa/Gaffey to PV Shelf tunnel alignment, upset or accidental releases from the soil/slurry conveyance system would be small and contained within the tunnel, releases associated with the use of hazardous materials (e.g., fuels, lubricants, and solvents) would be small and contained, and potential releases from oil wells would be contained within the soil/slurry conveyance system. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Site – JWPCP West

Construction

CEQA Analysis

Potential impacts on the public or the environment would be related to the upset or accidental release of contaminated soil or groundwater generated during construction of the shaft, upset or accidental release of hazardous materials (e.g., fuels, lubricants, and solvents), and the upset or accidental release associated with encountering undocumented oil wells.

The JWPCP West shaft site is near I-110; therefore, ADL and asbestos on surface soils are likely due to vehicle emissions that occurred prior to the use of unleaded fuel and asbestos-free brake pads. The JWPCP West shaft site does not have a history of contamination, and there are no records of

contaminated soil or groundwater on the site activities or on sites in the immediate vicinity. There are several oil wells on the property, which is located within the Wilmington Oil Field, including at least one that appears to be active.

Although construction-related spills of fuels, lubricating fluids, solvents, and other hazardous materials are not uncommon, the potential consequences of such accidents are generally small due to the localized, short-term nature of the releases. The volume of spills likely would be relatively small; the volume in any single vehicle or container would generally be less than 50 gallons, and fuel trucks would be limited to 10,000 gallons or less.

Additionally, quantities of hazardous materials that exceed the thresholds provided in Chapter 6.95 of the California Health and Safety Code would be subject to an RRP and an HMI. Federal and state regulations that govern the storage of hazardous materials in containers (i.e., the types of materials and the size of packages containing hazardous materials) and the separation of containers holding hazardous materials would limit the potential adverse effects of contamination to a relatively small area. As such, all hazardous materials utilized during construction of the JWPCP West shaft site would be used and stored in compliance with applicable state and federal requirements.

The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations. Runoff control requirements are discussed in detail in Chapter 11. Furthermore, through adherence to federal, state, and local regulations discussed in Section 10.3, impacts resulting from reasonably foreseeable upset and accident conditions would be minimized.

Several existing oil wells, at least one of which appears to be active, have been identified at the JWPCP West shaft site. However, the shaft would be sited to avoid existing wells if feasible. If avoiding a well were infeasible, the well would be properly abandoned consistent with DOGGR requirements prior to shaft construction, or remedial plugging of undocumented wells would be conducted.

As previously discussed, upset or accidental releases associated with the removal, transport, and disposal of contaminated groundwater or soil would follow the requirements discussed in Section 10.3; the use and transport of hazardous materials (e.g., fuels, lubricants, and solvents) would be of a small quantity and contained within the shaft; and potential releases from oil wells would be avoided by adjusting the shaft location or abandonment prior to shaft construction. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

Potential impacts on the public or the environment would be related to the upset or accidental release of contaminated soil or groundwater generated during construction of the shaft, upset or accidental release of hazardous materials (e.g., fuels, lubricants, and solvents), and the upset or accidental release associated with encountering undocumented oil wells.

The analysis and impacts associated with construction-related spills of fuels, lubricating fluids, solvents, and other hazardous materials would be the same as those described for the JWPCP West shaft site. Additionally, if hazardous materials exceeded the thresholds provided in Chapter 6.95 of the California Health and Safety Code, an RRP and an HMI would be required, as discussed for the JWPCP West shaft site. Therefore, all hazardous materials utilized during construction of the Angels Gate shaft site would be used and stored in compliance with applicable state and federal requirements.

The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations. Runoff control requirements are discussed in detail in Chapter 11. Furthermore, through adherence to federal, state, and local regulations discussed in Section 10.3, impacts resulting from reasonably foreseeable upset and accident conditions would be minimized.

As previously discussed, upset or accidental releases associated with the removal, transport, and disposal of contaminated groundwater or soil would follow the requirements discussed in Section 10.3, and the use and transport of hazardous materials (e.g., fuels, lubricants, and solvents) would be of a small quantity and contained within the shaft. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

10.4.5.3 Impact Summary – Alternative 3

Impacts on hazards and hazardous materials for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 10-5. Impacts analyzed in this EIR/EIS for

Alternative 3 (Project) are summarized in Table 10-8. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 10-8. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HAZ-1. Would Alternative 3 (Project) create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HAZ-3. Would Alternative 3 (Project) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 10-8 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

10.4.6 Alternative 4 (Recommended Alternative)

10.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

10.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years.

Impact HAZ-1. Would Alternative 4 (Project) create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

The Figueroa/Western to Royal Palms onshore tunnel alignment would extend from the JWPCP West shaft site to the Royal Palms shaft site. Onshore tunneling activities would generate a large volume of excavated material. If a slurry TBM were utilized, the bentonite slurry would not be considered

hazardous waste because it does not have any of the RCRA hazardous waste characteristics. However, if tunneling advanced through contaminated soil or groundwater, the soil/slurry could be considered hazardous, depending on the levels of contamination encountered. If the soil/slurry were deemed hazardous, it would be handled and transported in strict accordance with federal, state, and local requirements to minimize the impact on human health and the environment, as detailed in Section 10.3. Depending on the levels of soil contamination, it is possible that the soil/slurry would be disposed of at a Class III municipal landfill. However, the soil/slurry would be profiled to determine disposal options that are in compliance with applicable federal and state guidelines and regulations.

During construction, only a few hazardous materials would be located within the onshore tunnel. These hazardous materials would consist primarily of diesel fuel (to power the locomotives used to transport employees and materials), small quantities of lubricants and solvents, and, possibly, the slurry used during tunneling. Slurry has the potential to be considered hazardous only if it comes in contact with contaminated soil and/or groundwater. Slurry would be completely contained within tubing or piping until it exited the tunnel at the shaft site. The TBM would be electric, and solvents and lubricants would be used during the maintenance of the TBM and support equipment.

Due to the anticipated small quantity of hazardous materials present in the tunnel, and the limited potential for their impact to human health and the environment, there are no strict regulations related to their use and storage. The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis

The routine transport, use, and disposal of hazardous materials during construction of the Royal Palms shaft site would be related to the handling of contaminated soils and groundwater and the use of fuels and lubricants. No records of soil or groundwater contamination were reported and no historic records of commercial or industrial activities were found for the Royal Palms shaft site. Therefore, impacts from soil and/or groundwater contamination are not likely. Furthermore, due to Royal Palms shaft site's proximity to the Angels Gate shaft site, the geologic conditions are considered to be similar with only a relatively thin deposit of fluvial deposits anticipated. These fluvial deposits are likely underlain by shale bedrock, thus the likelihood of water-bearing materials to be encountered is low.

During construction, only a few hazardous materials would be located within the onshore tunnel. These hazardous materials would consist primarily of diesel fuel (to power the locomotives used to transport employees and materials), small quantities of lubricants and solvents, and, possibly, the slurry used during tunneling. Slurry has the potential to be considered hazardous only if it comes in contact with contaminated soil and/or groundwater. Slurry would be completely contained within tubing or piping until it exited the tunnel at the shaft site. The TBM would be electric, and solvents and lubricants would be used during the maintenance of the TBM and support equipment. The quantities of hazardous material

may exceed regulatory thresholds and thus require handling and storage in accordance with federal, state, or local regulations. The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations.

Excavated material (e.g., soil and groundwater, if encountered) has a low potential to be considered hazardous, but would be monitored and profiled at the shaft site prior to disposal. If excavated material were deemed hazardous, it would be subject to strict federal, state, and local regulations (e.g., permit to operate, NPDES permit). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HAZ-3. Would Alternative 4 (Project) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

The Figueroa/Western to Royal Palms onshore tunnel alignment would extend from the JWPCP West shaft site to the Royal Palms shaft site. Potential impacts on the public or the environment would be related to the upset or accidental release of hazardous material from the soil/slurry conveyance system and an upset or accidental release of hazardous materials (e.g., fuels, lubricants, and solvents).

Onshore tunneling activities would generate a large volume of excavated material. If a slurry TBM were utilized, the bentonite slurry would not be considered hazardous waste because it does not have any of the RCRA hazardous waste characteristics. However, if tunneling advances through contaminated soil or groundwater, the excavated material could be considered hazardous depending on the levels of contamination encountered. An upset or accidental release from the conveyance system would be responded to immediately, would be of small quantity, and would be contained within the tunnel. Spill response activities would include transport of hazardous materials out of the tunnel for disposal in accordance with federal, state, and local regulations.

During construction, only a few hazardous materials would be located within the onshore tunnel. These hazardous materials would consist primarily of diesel fuel (to power the locomotives used to transport employees and materials), small quantities of lubricants and solvents, and, possibly, the slurry used during tunneling. Slurry has the potential to be considered hazardous only if it comes in contact with contaminated soil and/or groundwater. Slurry would be completely contained within tubing or piping until it exited the tunnel at the shaft site. The TBM would be electric, and solvents and lubricants would be used during the maintenance of the TBM and support equipment.

As previously discussed, upset or accidental releases from the soil/slurry conveyance system would be small and contained within the tunnel, and releases associated with the use of hazardous materials (e.g., fuels, lubricants, and solvents) would be small and contained. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis

Potential impacts on the public or the environment would be related to the upset or accidental release of contaminated soil or groundwater generated during construction of the shaft and upset or accidental release of hazardous materials (e.g., fuels, lubricants, and solvents).

No known sources of contamination have been identified at the site or within the site vicinity; therefore, the likelihood of encountering contaminated soil or groundwater is low and associated upset conditions are not likely. Although construction-related spills of fuels, lubricating fluids, solvents, and other hazardous materials are not uncommon, the potential consequences of such accidents are generally small due to the localized, short-term nature of the releases. The volume of spills likely would be relatively small; the volume in any single vehicle or container would generally be less than 50 gallons, and fuel trucks would be limited to 10,000 gallons or less.

Additionally, quantities of hazardous materials that exceed the thresholds provided in Chapter 6.95 of the California Health and Safety Code would be subject to an RRP and an HMI. Federal and state regulations that govern the storage of hazardous materials in containers (i.e., the types of materials and the size of packages containing hazardous materials) and the separation of containers holding hazardous materials would limit the potential adverse impacts of contamination to a relatively small area. As such, all

hazardous materials utilized during construction of the Royal Palms shaft site would be used and stored in compliance with applicable state and federal requirements.

The Sanitation Districts' Health and Safety Plan for the project would include appropriate procedures for handling hazardous situations. Runoff control requirements are discussed in detail in Chapter 11. Furthermore, through adherence to federal, state, and local regulations discussed in Section 10.3, impacts resulting from reasonably foreseeable upset and accident conditions would be minimized.

As previously discussed, upset or accidental releases associated with the removal, transport, and disposal of contaminated groundwater or soil would follow the requirements discussed in Section 10.3, and the use and transport of hazardous materials (e.g., fuels, lubricants, and solvents) would be of a small quantity and contained within the shaft. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

10.4.6.3 Impact Summary – Alternative 4

Impacts on hazards and hazardous materials for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 10-5. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 10-9. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 10-9. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Director Indirect	Mitigation	Residual Impact After Mitigation
Impact HAZ-1. Would Alternative 4 (Project) create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HAZ-3. Would Alternative 4 (Project) create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 10-9 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Director Indirect	Mitigation	Residual Impact After Mitigation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

10.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an environmental impact report (EIR) must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

10.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the SJCWRP, WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994). Based on the current flow projections and the recommendations of the 2010 Plan, only the SJCWRP would be expanded by 25 million gallons per day. This is identical to Alternative 1 (Program). Therefore, the impacts for the expansion of the SJCWRP for Alternative 5 (Program) would be the same as for Alternative 1 (Program), and impacts under CEQA related to hazardous materials would be less than significant.

10.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. Alternative 5 (Project) would not involve construction of shafts, tunnels, and other ancillary facilities and construction areas; thus, hazardous soils would not be excavated, and no transport of hazardous soils would occur. No impacts on human health or the environment would be associated with Alternative 5 (Project).

As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. Discharges would be considered a violation of the JWPCP NPDES permit and of the CWA but would not result in significant hazard to the public or

environment through the release of hazardous materials. The lack of a new ocean discharge system would not have a significant impact on hazardous materials. Therefore, Alternative 5 (Project) would result in less than significant impacts under CEQA and NEPA related to hazardous materials.

10.4.7.3 Impact Summary – Alternative 5

Impacts on hazards and hazardous materials for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 10-5, excluding process optimization. Note that the mitigation measures for Alternatives 1 through 4 (Program) are not applicable to Alternative 5 (Program). There would be less than significant impacts related to hazards and hazardous materials for Alternative 5 (Project).

10.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.6 and 10.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

10.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

10.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

10.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Impacts for Alternative 6 would be the same as discussed under Alternative 5 (Project); therefore, there would be less than significant impacts on hazards and hazardous materials for Alternative 6.

10.4.8.4 Comparison of Significant Impacts and Mitigation for All Alternatives

The impacts on hazards and hazardous materials for all alternatives would be less than significant. No mitigation is required. Therefore, a table summarizing significant impacts and mitigation is not included in this chapter.

Chapter 11
HYDROLOGY, WATER QUALITY (FRESH WATER), AND PUBLIC HEALTH

11.1 Introduction

This chapter describes existing environmental and regulatory settings for hydrologic, water quality (fresh water), and public health conditions; analyzes the potential impacts on hydrology, water quality, and public health that would result from the implementation of the program and project elements; and determines the significance of those impacts.

The focus of this chapter is on fresh water hydrology and water quality of rivers, streams, creeks, and drains that are connected to the Rio Hondo and San Gabriel Coastal Spreading Grounds and waterways that eventually reach the San Gabriel River Estuary and the Pacific Ocean. Impacts associated with the marine environment of the Pacific Ocean are discussed in Chapter 13 with the exception of tsunamis, which are included in this chapter.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the hydrology and water quality impact analysis for each program element is summarized by alternative in Table 11-1.

Table 11-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	C
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	C
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	O
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	O
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	O

Table 11-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	O
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	O
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	C
Biosolids Management	X	X	X	X	X	N/A	O	-
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 11-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 11.4.7 for a discussion of the No-Project Alternative.
[b] See Section 11.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element carried forward as a project. The location of the hydrology and water quality impact analysis for each project element is summarized by alternative in Table 11-2.

Table 11-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	C
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	-
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	C
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	-
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	-
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	C,O	C
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C,O
JWPCP West			X	X	N/A	N/A	C,O	C,O
TraPac	X	X			N/A	N/A	C,O	C,O
LAXT	X	X			N/A	N/A	C,O	C,O
Southwest Marine	X	X			N/A	N/A	C,O	C,O
Angels Gate			X		N/A	N/A	C,O	C,O
Royal Palms				X	N/A	N/A	C,O	C,O

Table 11-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	C,O	C
PV Shelf		X	X		N/A	N/A	C,O	C
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	C

[a] See Section 11.4.7 for a discussion of the No-Project Alternative.
[b] See Section 11.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

11.2 Environmental Setting

11.2.1 Regional Setting

The Joint Outfall System (JOS) service area is located in multiple groundwater basins and watersheds. The surface waters that extend through the service area are supplied by activities in the watershed and feed the groundwater system. The hydrology within the service area is primarily governed by engineered relationships between the groundwater basins, the surface waters, and dischargers into the surface waters, such as the Sanitation Districts of Los Angeles County (Sanitation Districts). This section provides a description of these hydraulic and hydrogeologic features and the hydraulic connections among these features as they relate to the program and project elements.

11.2.1.1 Groundwater Basins

As shown on Figure 11-1, the principal groundwater basins in the JOS service area are the San Gabriel Valley Groundwater Basin (commonly referred to as the “Main San Gabriel Basin”) and the Coastal Plain of Los Angeles Groundwater Basin. These groundwater basins are recharged by various surface spreading and injection sites in the basins. The two principal spreading grounds in the JOS service area are the Rio Hondo Spreading Grounds, located along the Rio Hondo in the city of Montebello, and the San Gabriel Coastal Spreading Grounds, located on the San Gabriel River in the city of Pico Rivera. Both of these spreading grounds use Sanitation Districts’ tertiary-treated effluent, referred to as recycled water, water imported from the State Water Project and Colorado River, and rainwater runoff to recharge the groundwater basin through percolation.

For this EIR/EIS analysis, the applicable basins and subbasins and the JOS facility located over each basin are identified in Table 11-3.

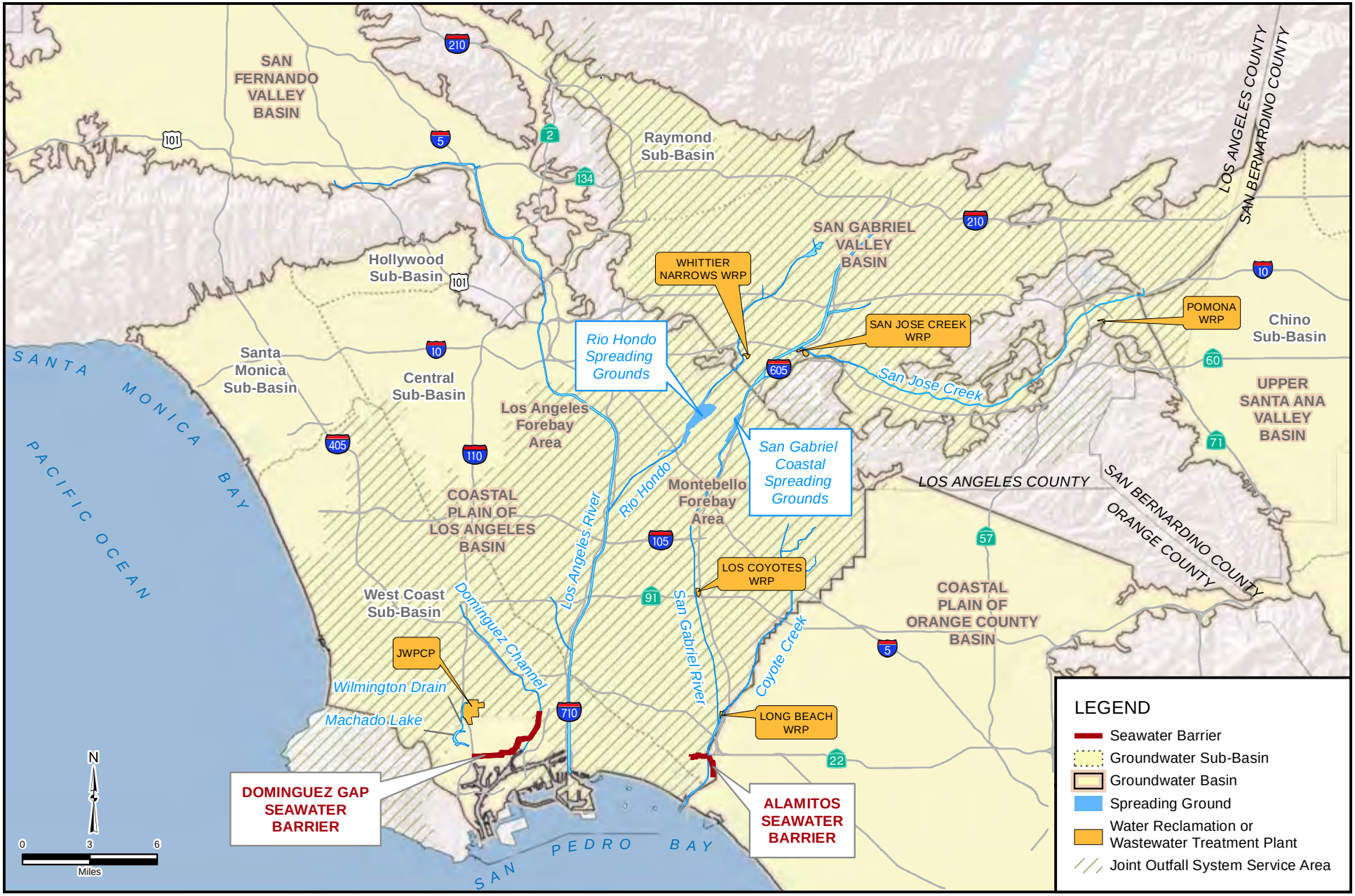


FIGURE 11-1

CLEARWATER Program

Regional Groundwater Basins

Source: Sanitation Districts of Los Angeles County 2011, Cal-Atlas 2011 (Teale Ground Water Basins 2007), LA County DPW 2011, ESRI 2011

Table 11-3. Groundwater Basins and Program Elements

Groundwater Basin	Subbasin	Facility
San Gabriel Valley[a]	None	Conveyance System, WNWRP, SJCWRP, and POWRP
Coastal Plain of Los Angeles[b]	West Coast Basin[c]	Conveyance System and JWPCP
	Central Basin[d]	Conveyance System, LCWRP, and LBWRP

[a] Identified as Basin 4-13 in the California Department of Water Resources (DWR) Bulletin 118.
[b] Identified as Basin 4-11 in DWR Bulletin 118.
[c] Identified as Basin 4-11.03 in DWR Bulletin 118.
[d] Identified as Basin 4-11.04 in DWR Bulletin 118.
Source: LARWQCB 1994:1-10

San Gabriel Valley Groundwater Basin

This basin is located in eastern Los Angeles County and includes the water-bearing sediments underlying most of the San Gabriel Valley and a portion of the upper Santa Ana Valley that lies in Los Angeles County. Annual precipitation in the basin ranges from 15 to 31 inches, and averages 19 inches. The Raymond Fault and contact between Quaternary sediments and consolidated basement rocks of the San Gabriel Mountains form the northern boundary, the Chino Fault and San Jose Fault form the eastern boundary, and the exposed consolidated rocks of the Repetto, Merced, and Puente Hills bound the basin on the south and west. The headwaters of both the Rio Hondo and San Gabriel River are located in the San Gabriel Mountains. Surface water flows southwest across the San Gabriel Valley and exits through Whittier Narrows, a gap between the Merced and Puente Hills (DWR 2004a).

The water-bearing sediments in this basin are dominated by unconsolidated to semi-consolidated alluvium that was deposited by streams flowing out of the San Gabriel Mountains (DWR 2004a). Recharge occurs primarily through direct percolation of precipitation and percolation of stream flow. Stream flow includes local mountain runoff, imported water, and treated effluent. Subsurface flows enter from the Raymond Basin, Chino Basin, and fracture systems along the San Gabriel Mountain front (DWR 2004a).

The groundwater surface generally follows the topographic slope, with groundwater flowing from the edges of the basin toward the center of the basin, then southwestward to exit through Whittier Narrows, which is a structural and topographical low point.

Coastal Plain of Los Angeles Groundwater Basin

The Coastal Plain of Los Angeles Groundwater Basin includes numerous subbasins. Subbasins in the JOS service area are described in detail in this section and shown on Figure 11-1. In 2008[1], 55,791 acre-feet of stormwater runoff, 1,510 acre-feet of imported water, and 39,767 acre-feet of recycled water (LACDPW 2008a:59) were replenished to groundwater in the coastal plain.

Central Basin (Central Subbasin)

The Central Basin (also known as the Central Subbasin) encompasses a large portion of the southeastern part of the Coastal Plain of Los Angeles Groundwater Basin and was adjudicated in 1965. The Los Angeles and San Gabriel Rivers flow over the Central Basin on their way to the Pacific Ocean. There are three agencies that oversee the management of the Central Basin:

[1] LACDPW uses an annual water year for keeping records and in 2008 the water year extended from October 1, 2007 to September 30, 2008.

- The Water Replenishment District of Southern California (Water Replenishment District) is responsible for obtaining supplies of water (such as imported water, storm water, and recycled water) for the purposes of replenishing the groundwater basins.
- The Los Angeles County Department of Public Works (LACDPW) operates the spreading grounds and seawater intrusion barriers.
- The Central Basin Municipal Water District is the wholesaler of imported water for the basin.

The Central Basin is bound to the north by the La Brea high surface divide; on the northeast and east by the less permeable tertiary rocks of the Elysian, Repetto, Merced, and Puente Hills; and to the southwest by the Newport-Inglewood Fault zone. To the southeast, Coyote Creek roughly follows the regional drainage province boundary between the Central Basin and the Coastal Plain of Orange County Groundwater Basin (DWR 2004b).

Groundwater enters the Central Basin through surface and subsurface flow and by direct percolation of precipitation, stream flow, and applied water (including imported and recycled) replenishing the aquifers in areas where permeable sediments are exposed at the ground surface. Natural replenishment of the groundwater supply is from surface inflow through Whittier Narrows, with some underflow from the San Gabriel Valley. Groundwater occurs throughout the basin in Holocene and Pleistocene Age sediments at relatively shallow depths. The Central Basin pressure area contains many aquifers of permeable sands and gravels separated by semi-permeable to impermeable sandy clay to clay that extend to approximately 2,200 feet below ground surface (bgs). Throughout much of the basin, the aquifers are confined by barriers called aquicludes, but areas with semipermeable aquicludes allow some interaction between the aquifers. In much of the basin, local semi-perched groundwater conditions are created by the near surface Bellflower aquiclude that restricts vertical percolation into the Gaspur and other underlying aquifers (DWR 2004b).

The Central Basin is traditionally divided between pressure areas and forebays, where forebays have unconfined groundwater conditions and relatively interconnected aquifers that extend up to 1,600 feet deep to provide a direct connection to surface water recharge areas of the basin. There are two forebays in the Central Basin, the Los Angeles Forebay and the Montebello Forebay, as shown on Figure 11-1 (DWR 2004b). The Montebello Forebay extends southward from the Whittier Narrows where the San Gabriel River encounters the Central Basin, and is the most important area of recharge in the subbasin.

Spreading Grounds

There are three areas within the Montebello Forebay where water is collected and recharged into the groundwater basin. These are the Rio Hondo Spreading Grounds, the San Gabriel Coastal Spreading Grounds, and the lower San Gabriel River, where water is allowed to percolate through the unlined river bottom. Current operations of these recharge facilities conserve an annual average of 150,000 acre-feet of local, imported, and recycled water (LACDPW 2010b). Imported water, rain water runoff, and treated effluent from the Pomona Water Reclamation Plant (POWRP), San Jose Creek Water Reclamation Plant (SJCWRP), and Whittier Narrows Water Reclamation Plant (WNWRP) are used to recharge the Montebello Forebay at the Rio Hondo and San Gabriel Coastal Spreading Grounds (DWR 2004c).

The Rio Hondo Spreading Grounds include 570 acres where water is diverted from the Rio Hondo channel into 20 basins, each 6 to 10 feet deep (LACDPW 2010b). The San Gabriel Coastal Spreading Grounds cover 128 acres and include 3 basins. An inflatable dam is operated at the headworks of the San Gabriel Coastal Spreading Grounds to divert flows into the spreading grounds or regulate river flow (LACDPW 2010b). The lower San Gabriel River in this area is unlined, allowing percolation. Several inflatable rubber dams are installed to increase spreading capacity along the river (LACDPW 2010b). See

Section 11.3.3.3 for a description of the permit governing the type and volume of recharge to the Montebello Forebay.

The purpose of the various spreading grounds is to recharge the groundwater basin so purveyors can extract the groundwater as a potable water source. Therefore, there are numerous production wells within the Central Basin and several adjacent to the spreading grounds.

Seawater Barriers

Seawater intrusion occurs in some aquifers that are exposed to ocean waters. To limit seawater intrusion, gap barriers have been installed where fresh water is pumped into the ground to limit the incursion of seawater into the basin. The Alamitos Seawater Barrier (see Figure 11-1) is located in the Central Basin and was created through the use of injection wells placed in the city of Long Beach to protect the groundwater from seawater intrusion. A portion of the recycled water produced by the Sanitation Districts' Long Beach Water Reclamation Plant (LBWRP) is treated with microfiltration, reverse osmosis, and ultraviolet light by the Water Replenishment District and blended with imported water for injection into this barrier.

West Coast Basin (West Coast Subbasin)

The West Coast Basin (also known as the West Coast Subbasin) encompasses a large portion of the southwestern part of the Coastal Plain of Los Angeles Groundwater Basin. Groundwater levels in the basin have risen approximately 30 feet (DWR 2004d) since it was adjudicated in 1961. There are three agencies that oversee the management of the West Coast Basin:

- The Water Replenishment District is responsible for obtaining sources to recharge the groundwater basins.
- LACDPW operates the seawater intrusion barriers.
- The West Basin Municipal Water District is the wholesaler of imported water for the basin.

The subbasin is bound by the Ballona Escarpment to the north; the Newport-Inglewood Fault zone to the east; and the Pacific Ocean and consolidated rocks of the Palos Verdes Hills to the south and west. Average annual precipitation in the basin is 12 to 14 inches. The surface is crossed in the south by the Los Angeles River through the Dominguez Gap, and the San Gabriel River through the Alamitos Gap, both of which flow into San Pedro Bay. The general groundwater flow pattern is southward and westward from the Central Basin toward the ocean (DWR 2004d).

Seawater Barriers

Seawater intrusion occurs in some aquifers that are exposed to ocean waters. To limit seawater intrusion, gap barriers have been installed where fresh water is pumped into the ground to limit the incursion of seawater into the basin. The gap barrier closest to the JWPCP is the Dominguez Gap Barrier Project (see Figure 11-1). This barrier is created through the use of injection wells placed near the community of Wilmington to protect the Gaspur zone from seawater intrusion (DWR 2004d).

11.2.1.2 Watersheds

As shown on Figure 11-2, the JOS service area is located in the watersheds of the Dominguez Channel, Los Angeles River, and San Gabriel River (LARWQCB 1994). These urbanized watersheds are highly modified and primarily consist of urban stormwater drainage systems. They include tributaries to, or rivers, creeks, and other water bodies near, major streams. The main rivers and creeks are the Dominguez Channel, Los Angeles River, the San Gabriel River, the Rio Hondo, Coyote Creek, and San Jose Creek.

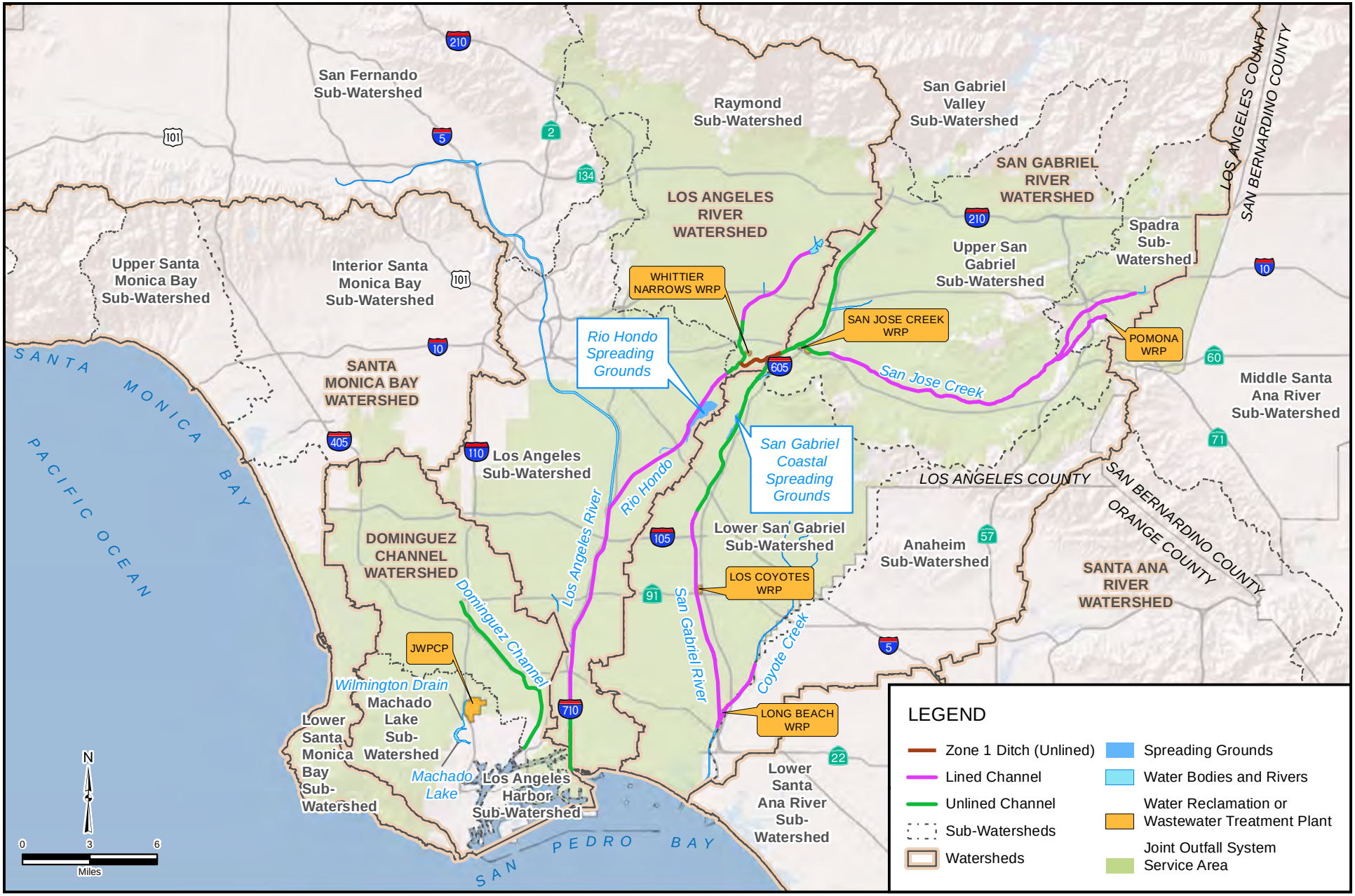


FIGURE 11-2

CLEARWATER Program

Regional Watersheds and River Systems

Source: Sanitation Districts of Los Angeles County 2011, Cal-Atlas (California Interagency Watershed Map of 1999) 2011, Thomas Bros. 2011, ESRI 2011

The JOS facilities are located in the watersheds and subwatersheds shown in Table 11-4.

Table 11-4. Watersheds and Subwatersheds of the JOS Facilities

Watershed	Subwatershed	Facilities
Los Angeles River	Raymond	Conveyance system
	Rio Hondo	Conveyance system and WNWRP
	San Fernando	Conveyance system only
	Los Angeles	Conveyance system only
San Gabriel River	Lower San Gabriel	Conveyance system and LBWRP and LCWRP
	Upper San Gabriel	Conveyance system and SJCWRP
	San Jose Creek	Conveyance system and POWRP
	San Gabriel Valley	Conveyance system only
	Anaheim	Conveyance system only
Dominguez Channel	Machado Lake	Conveyance system and JWPCP
	Los Angeles Harbor	Conveyance system

Source: LARWQCB 1994:1-10

Los Angeles River Watershed

The Los Angeles River Watershed covers approximately 848 square miles and includes seven main tributaries, one of which is the Rio Hondo. There are 22 lakes and several spreading grounds in the watershed (City of Los Angeles 2011a). The watershed is hydraulically connected to the San Gabriel River through the Whittier Narrows Dam and the Zone 1 Ditch (LACDPW 2010a). Additionally, the Rio Hondo and San Gabriel Coastal Spreading Grounds are connected via pipe to maximize groundwater infiltration potential by allowing water to be transported to the available spreading ground as necessary (Matsumoto 2007).

San Gabriel River Watershed

The San Gabriel River Watershed is located in eastern Los Angeles County, and covers approximately 640 square miles including portions of 37 cities. The San Gabriel River flows 58 miles from its headwaters in the San Gabriel Mountains to its confluence with the Pacific Ocean. Major tributaries include Walnut Creek, San Jose Creek, Coyote Creek, and stormdrains from the 19 cities through which the San Gabriel River flows (LACDPW 2010c). The San Gabriel River has two distinct flow conditions. During wet-weather periods, flow is generated primarily by stormwater runoff. However, during dry-weather periods, flows are less variable and lower, and are mainly derived from water reclamation plant (WRP) discharges, urban runoff, and groundwater-derived base flow. Above the Whittier Narrows Dam, water from the San Gabriel River and its tributaries can be diverted to the Rio Hondo via the Zone 1 Ditch through Whittier Narrows. Channel flow below Whittier Narrows Dam can be impounded by a series of seven rubber dams in the main channel to allow for diversion into the San Gabriel Coastal Spreading Grounds and to maximize infiltration to the channel (LACDPW 2008a:500). Approximately 3.5 miles downstream of the spreading grounds, the channel is lined with concrete for about 10 miles to its mouth, where it flows into the San Gabriel River Estuary. As previously noted, the Rio Hondo and San Gabriel Coastal Spreading Grounds are connected via pipe to maximize groundwater infiltration potential by allowing water to be transported to the available spreading ground as necessary (Matsumoto 2007).

Dominguez Channel Watershed

The Dominguez Channel Watershed covers approximately 133 square miles in southwestern Los Angeles County and encompasses 19 cities or portions thereof, and a portion of unincorporated Los Angeles County (Dominguez Watershed Advisory Council 2004:1-3). Waterbodies within the watershed include

the Dominguez Channel, Wilmington Drain, Torrance/Carson Channel (Torrance Lateral), Machado Lake, Los Angeles and Long Beach Harbors, and Cabrillo Beach.

Approximately 93 percent of the land in the watershed is developed. It is estimated that 62 percent of the land is covered with impervious surface, which is the highest percentage for any watershed in Los Angeles County (Dominguez Watershed Advisory Council 2004:1-3). This watershed includes two hydrologic subunits that drain primarily through a network of underground stormdrains. The northern unit drains into the Dominguez Channel and the southern drains directly into the Los Angeles and Long Beach Harbors (Los Angeles County 2005:6-4).

Machado Lake Subwatershed

The Machado Lake Subwatershed covers approximately 19.5 square miles in the Dominguez Channel Watershed that includes Lomita and portions of Rolling Hills, Rolling Hills Estates, Torrance, and the city of Los Angeles. The outflow channel for the watershed is the Wilmington Drain (see Figure 11-2). Upstream (northeast) of Interstate (I-) 110, the Wilmington Drain is a concrete-lined channel with vertical sides, but downstream (southwest) of the freeway near Lomita Boulevard, it transitions to an unlined channel and appears relatively natural with extensive vegetation along the banks. At Pacific Coast Highway, the channel is adverse grade; during low flows, it occasionally requires pumping to move water into Machado Lake (MEC 2004:2-100). The city of Los Angeles is preparing to improve the unlined channel (City of Los Angeles 2011b).

Los Angeles Harbor Subwatershed

The Los Angeles Harbor Subwatershed drains approximately 36.7 square miles of the lower portion of the Dominguez Watershed to the Los Angeles and Long Beach Harbors. It includes portions of the cities of Los Angeles, Long Beach, Rancho Palos Verdes, and Rolling Hills. Elevations in this watershed range from near sea level at the Ports of Los Angeles and Long Beach to 1,500 feet in the Rolling Hills area (MEC 2004:2-100). The main open channel drain is the Gaffey Street Drain, which runs parallel to Gaffey Street south of Machado Lake.

11.2.2 Program Setting

Conveyance System

The conveyance system is located throughout Los Angeles County. Improvements to the conveyance system would generally occur in the Los Angeles River, San Gabriel River, and Dominguez Channel Watersheds. These improvements would be located over the West Coast, Central, Raymond, and San Gabriel Valley Groundwater Basins.

Water Reclamation Plants

The Sanitation Districts' WRPs produce recycled water for beneficial reuse (e.g., landscape and agricultural irrigation, industrial purposes, and groundwater recharge) and are permitted to discharge recycled water into the rivers, creeks, and spreading grounds. The locations of the WRPs are shown on Figure 11-1. This section provides a discussion of effluent management at the WRPs and hydrology of the receiving waters, beneficial uses, impaired receiving waters, and onsite soils.

WRP Effluent Management and Hydrology of Receiving Waters

Each WRP has a National Pollution Discharge Elimination System (NPDES) permit that allows the discharge of recycled water into receiving waters. The NPDES permit defines the monthly average dry-weather flow rate that cannot be exceeded. Effluent flow rates for each WRP are monitored to ensure that the permitted discharge rate of the WRP is not exceeded. Recycled water has a variety of uses

including irrigation, industrial use, agriculture, and groundwater recharge, and can be discharged into receiving waters. Daily discharges into receiving waters from the WRPs vary with flows into the WRPs and recycled water demands. Inputs of domestic and industrial wastewater into the WRPs vary over time and are dependent on sources outside of the Sanitation Districts' control. The demand for recycled water for industrial and landscaping purposes varies as well, and is not under the Sanitation Districts' control. Therefore, the recycled water discharge into receiving waters varies in response to factors that are not under the Sanitation Districts' control. Due to the variability of these inputs and outputs, baseline recycled water discharge from each WRP is represented by the annual average daily discharge (i.e., total daily discharges divided by 366[2]) and an annual range represented by the driest and wettest months. These discharges are listed in Table 11-5. Discharge locations and the associated receiving water reach are mapped on Figure 11-3 (SWRCB 2011).

Table 11-5. WRP Effluent Discharges in 2008

			2008 Average Daily Discharge (MGD)		
WRP	**Effluent Discharge Point**	**Use**	**Driest Month**	**Wettest Month**	**Annual**
SJCWRP[a]	SJC001A, SJC002, SJC003	Groundwater Recharge: San Jose Creek (unlined) San Gabriel River (unlined) Zone 1 Ditch (unlined)	16.3	35.4	24
POWRP	PO001	Groundwater Recharge: San Jose Creek (unlined)	2.2	7.0	4
WNWRP[b]	WN001, WN002, WN004	Groundwater Recharge: San Gabriel River (unlined) Zone 1 Ditch (unlined) Rio Hondo (unlined)	0.4	7.9	5
SJCWRP	SJC001	Discharge: San Gabriel River (lined)	32.6	55.6	41
LCWRP	LC001	Discharge: San Gabriel River (lined)	19.3	28.6	25
LBWRP	LB001	Discharge: Coyote Creek (lined)	8.2	17.3	12

[a] SJC001B is not included in this table, because it has not been constructed.
[b] WN003 is not included in this table, because it currently is not in service.
MGD = million gallons per day
Unlined = discharge is to a receiving water that has a natural material bed where discharges can infiltrate to groundwater
Lined = discharge is to a receiving water with a concrete bed and banks that prevent infiltration to groundwater
Sources: Sanitation Districts 2009a; 2009b; 2009c; 2009d; 2009e

Some recycled water is not discharged from the WRPs into receiving waters, but instead piped into a recycled water distribution system (e.g., purple pipes) and conveyed to various users. All Southern California water providers in their urban water management plans and integrated resource plans identify recycled water as an important source of water for the region. The more recycled water that is used by the region, the less dependent water providers are on importing water from sources outside of the region (e.g., the Colorado River and the State Water Project). Uses for recycled water not discharged into receiving waters are listed in Table 11-6.

[2] 2008 was a leap year.

FIGURE 11-3

CLEARWATER Program

Water Reclamation Plants and Discharge Points

Source: Sanitation Districts of Los Angeles County 2011, LA County DPW 2011, Thomas Bros. 2011, ESRI 2011

Table 11-6. Uses for Recycled Water Not Discharged Into Receiving Waters (2008)

WRP	Description of Uses
SJCWRP	▪ Agricultural irrigation ▪ Landscape irrigation (including schools, golf courses, parks, and greenbelts) ▪ Industrial (including dust control and cooling towers)
POWRP	▪ Agricultural irrigation ▪ Landscape irrigation (including schools, golf courses, parks, nurseries, and greenbelts) ▪ Industrial (including dust control and cooling towers)
LCWRP	▪ Agricultural irrigation ▪ Landscape irrigation (including schools, golf courses, parks, nurseries, and greenbelts) ▪ Industrial (including dust control, cooling towers, carpet dying, metal finishing, and concrete mixing)
LBWRP	▪ Landscape irrigation (including schools, golf courses, parks, nurseries, greenbelts, and oil-zone repressurization) ▪ Industrial (including street sweeping and oil zone repressurization) ▪ Industrial (including vehicle washing) ▪ Influent to Leo Vander Lans Advanced Water Treatment Facility and injection into the Alamitos Seawater Barrier
WNWRP	▪ Landscape irrigation (including schools, golf courses, parks, and nurseries)

Sources: Sanitation Districts 2009a; 2009b; 2009c; 2009d; 2009e

As discussed in Chapter 6 under Impact Bio-1, recycled water discharges from the WRPs can represent a large part of the overall flow in different receiving waters depending on the season and the operation of the WRPs. For less than 1 month per year (cumulative time), flow in the receiving water is dominated by runoff from storm events. At these times, the fraction of flow contributed by WRP discharges varies widely from a fraction of a percent to approximately half. For the remainder of the year, flow is dominated by recycled water discharges from the WRPs, with important secondary contributions from urban runoff, groundwater upwelling, and releases from upstream reservoirs. For the May-to-October dry season, recycled water discharges from the WRPs usually constitute the principal source of flow in the Rio Hondo and Zone 1 Ditch, and the most important sources of flow for San Jose Creek below the POWRP and the San Gabriel River flow downstream of the Santa Fe Dam. It follows that for nearly the entire year, the volume of flow in these waters is predominately influenced by recycled water discharges from the WRPs. Summaries of recycled water discharges from each WRP are provided in the following sections.

San Jose Creek Water Reclamation Plant

Effluent Discharge Locations

Discharge from SJC002 enters the unlined reach of San Jose Creek (San Jose Creek Reach 1, Figure 11-3). During certain periods of the year, discharges from SJC002 account for about one-half of the total flow in San Jose Creek. Because SJC002 is only about 0.5 mile upstream of the confluence with the San Gabriel River, this discharge also has a substantial effect on flows in the river. Therefore, dry-season flow in the San Gabriel River below San Jose Creek consists of WRP discharges and the natural flow contribution from San Jose Creek plus any urban runoff. Discharge from SJC003 enters the unlined channel of the San Gabriel River (San Gabriel River Reach 3, Figure 11-3). Discharge from SJC001A enters the unlined reach of San Gabriel River (San Gabriel River Reach 2, Figure 11-3). Effluent can also be directly discharged to the San Gabriel Coastal Spreading Grounds. Recycled water not contained within the spreading grounds or behind the rubber dams flows downstream primarily in the San Gabriel River to the San Gabriel River Estuary. It should be noted that this would only occur during extremely heavy rainfall events in which the Rio Hondo Spreading Grounds could no longer take in river flow. Otherwise, all recycled water discharged into the Rio Hondo is spread for recharge. Recycled

water can also be diverted from the San Gabriel River into the Zone 1 Ditch; from there, into the Rio Hondo; and then to the Los Angeles River and the Los Angeles River Estuary. Discharges at SJC001 enter the lined channel of the San Gabriel River (San Gabriel River Reach 1, Figure 11-3) and are the major dry-season source of flow in the San Gabriel River just upstream of the Los Coyotes Water Reclamation Plant (LCWRP), and are the predominant source of flow the remainder of the year except during relatively brief periods following major precipitation events. This is because the discharge at SJC001 is located 3.5 miles downstream from the San Gabriel Coastal Spreading Grounds. If flows are fully retained and infiltrate into the ground water at the spreading grounds, then this discharge likely accounts for the majority of the dry-season flow of the San Gabriel River at this point, as there are no significant tributaries downstream until Coyote Creek at the LBWRP.

Effluent Water Quality

This section presents a summary of the physical, chemical, and biological characteristics of the effluent from the SJCWRP. The NPDES permit for the SJCWRP contains limits that are consistent with specific receiving water quality objectives of the Water Quality Control Plan for the Los Angeles Region (Basin Plan) and the State Implementation Policy (SIP) (SWRCB 2005). In addition to the NPDES permit, the SJCWRP has water-recycling requirements and is regulated under the Montebello Forebay Groundwater Recharge Permit. The water-recycling requirements for the WRPs contain limits consistent with specific water quality objectives for hydrologic subareas in the Basin Plan. The Basin Plan is discussed in Section 11.3.3.1.

The SJCWRP NPDES permit includes approximately 27,500 numeric limitations that must be met each year based on quantitative results of final effluent and receiving water sampling and analysis. The permit also states that pollutants must not be present in wastes discharged at concentrations that pose a threat to groundwater quality. Additionally, the permit contains limits for total coliform bacteria, turbidity, radioactivity, and toxicity. A summary of some of the effluent characteristics monitored at the SJCWRP for 2008 is presented in Table 11-7, along with the NPDES effluent limits applicable during that year. The water quality constituents are ordered in the table according to: (1) physical parameters, (2) chemical parameters, and (3) emerging parameters of interest.

Table 11-7. SJCWRP Effluent Water Quality for 2008

			2008 Effluent Monitoring Data		
Constituent	**Units**	**NPDES Permit Limit[a]**	**Mean**	**Max**	**Min**
pH		6.5 (min); 8.5 (max)	7.5	7.7	7.3
Turbidity	NTU	2 (24-hr composite)	0.9	1.0	0.6
Total Coliform	No./100 mL	2.2 (median of last 7 samples)	< 1	< 1	< 1
Temperature	^{o}F	86 (max)	79	84	73
Suspended Solids	mg/L	45 (daily max); (40 weekly ave); 15 (monthly ave)	< 3.0	< 2.6	< 2.5
Settleable Solids	mL/L	0.3 (daily max); 0.1 (monthly ave)	< 0.1	< 0.1	< 0.1
Total Dissolved Solids	mg/L	750 (monthly ave)	601	650	499
Biochemical Oxygen Demand	mg/L	20 (monthly ave)	< 3	< 3	< 3
Ammonia Nitrogen	mg/L	Depends on temp and pH	1.15	1.36	1.01
Total Nitrogen	mg/L	N/A	6.57	9.04	4.88
Fluoride	mg/L	1.6 (monthly ave)	0.46	0.65	0.38
Boron	mg/L	1.0 (monthly ave)	0.40	0.50	0.309
Chloride	mg/L	180 (monthly ave)	155	160	122

Table 11-7 (Continued)

Constituent	Units	NPDES Permit Limit[a]	2008 Effluent Monitoring Data		
			Mean	Max	Min
Sulfate	mg/L	300 (monthly ave)	126	131	85
Total Hardness	mg/L	N/A	241	275	203
Arsenic	µg/L	N/A	ND	DNQ 0.99	DNQ 0.71
Cadmium	µg/L	N/A	0.08	0.3	DNQ 0.04
Total Chromium	µg/L	N/A	0.62	0.68	0.53
Copper	µg/L	31 (monthly ave)	4.0	5.8	2.1
Lead	µg/L	20 (monthly ave)	0.082	0.274	DNQ 0.169
Mercury	µg/L	1.2 (monthly ave)	0.0032	0.0074	0.0011
Selenium	µg/L	9 (monthly ave)	ND	DNQ 0.5	DNQ 0.35
Zinc	µg/L	N/A	49	52.4	44.2
N-Nitrosodimethylamine	µg/L	20 (monthly ave)	0.158	0.331	ND

[a] Board Order No. R4-2004-0097. This permit was in effect in 2008; however, a new NPDES permit was adopted in 2009. Therefore, current permit limits may have changed.

Mean = mean of all monthly means in 2008
Max = mean of all measurements in the month with the highest mean value
Min = mean of all measurements in the month with the lowest mean value
mg/L = milligrams per liter
mL/L = milliliters per liter
µg/L = micrograms per liter
°F = degrees Fahrenheit
NTU = nephelometric turbidity unit
ND = non-detect
DNQ = detected but not quantified
N/A = not applicable

Source: Sanitation Districts 2009a:Table 4-4, Table 4-9

Pomona Water Reclamation Plant

Effluent Discharge Location

Discharge from the POWRP (PO001) is released into a predominately lined tributary to San Jose Creek (tributary to San Jose Creek Reach 2, Figure 11-3). It then flows approximately 12 miles through the tributary and San Jose Creek Reach 2 to the unlined portion of San Jose Creek channel (San Jose Creek Reach 1, Figure 11-3), which includes the last 6,000 feet of San Jose Creek before the confluence with the San Gabriel River near the SJCWRP. Below this point, POWRP discharges are commingled with discharges from SJCWRP through SJC002 and SJC003, as previously described. POWRP discharges are, therefore, a component of dry-season flows in the lower San Jose Creek.

Effluent Water Quality

This section presents a summary of the physical, chemical, and biological characteristics of the effluent from the POWRP. The NPDES permit for the POWRP contains limits that are consistent with specific receiving water quality objectives of the Basin Plan and the SIP (SWRCB 2005). In addition to the NPDES permit, the POWRP has water-recycling requirements, and is regulated under the Montebello Forebay Groundwater Recharge Permit. The water-recycling requirements for the WRPs contain limits consistent with specific water quality objectives for hydrologic subareas in the Basin Plan. The Basin Plan is discussed in Section 11.3.3.1.

The POWRP NPDES permit includes approximately 7,800 numeric limitations that must be met each year based on quantitative results of final effluent and receiving water sampling and analysis. The permit also states that pollutants must not be present in wastes discharged at concentrations that pose a threat to groundwater quality. Additionally, the permit contains limits for total coliform bacteria, turbidity, radioactivity, and toxicity. A summary of some of the effluent characteristics monitored at the POWRP

for 2008 is presented in Table 11-8, along with the NPDES effluent limits applicable during that year. The water quality constituents are ordered in the table according to: (1) physical parameters, (2) chemical parameters and (3) emerging parameters of interest.

Table 11-8. POWRP Effluent Water Quality for 2008

			2008 Effluent Monitoring Data		
Constituent	**Units**	**NPDES Permit Limit[a]**	**Mean**	**Max**	**Min**
pH		6.5 (min); 8.5 (max)	7.0	7.1	7.0
Turbidity	NTU	2 (24-hr composite)	0.9	1.1	0.7
Total Coliform	No./100 mL	2.2 (median of last 7 samples)		< 1	< 1
Temperature	°F	86 (max)	78	85	69
Suspended Solids	mg/L	45 (daily max); 40 (weekly ave); 15 (monthly ave)	< 2.5	< 2.7	< 2.5
Settleable Solids	mL/L	0.3 (daily max); 0.1 (monthly ave)	< 0.1	< 0.1	< 0.1
Total Dissolved Solids	mg/L	750 (monthly ave)	576	652	488
Biochemical Oxygen Demand	mg/L	45 (daily max); (30 weekly ave); 20 (monthly ave)	< 3	< 5	< 3
Ammonia Nitrogen	mg/L	Depends on temp and pH	1.17	1.77	0.61
Total Nitrogen	mg/L	N/A	8.18	10.25	6.65
Fluoride	mg/L	1.6 (monthly ave)	0.30	0.37	0.24
Boron	mg/L	1.0 (monthly ave)	0.364	0.63	0.296
Chloride	mg/L	180 (monthly ave)	130	147	118
Sulfate	mg/L	300 (monthly ave)	76.0	87.0	66.9
Total Hardness	mg/L	N/A	225	259	201
Arsenic	µg/L	N/A	1.25	1.68	DNQ 0.87
Cadmium	µg/L	5 (monthly ave)	ND	DNQ 0.18	DNQ 0.04
Total Chromium	µg/L	N/A	0.82	1.12	0.63
Copper	µg/L	N/A	5.32	7.07	4.26
Lead	µg/L	10 (monthly ave)	0.60	0.87	0.40
Mercury	µg/L	0.1 (monthly ave)	0.00423	0.0166	0.0015
Selenium	µg/L	N/A	ND	DNQ 0.69	DNQ 0.43
Zinc	µg/L	N/A	62.7	76.6	53
N-Nitrosodimethylamine	µg/L	16 (daily max); 8.1 (monthly ave)	0.0074	0.300	ND

[a] Board Order No. R4-2004-0099. This permit was in effect in 2008; however, a new NPDES permit was adopted in 2009. Therefore, current permit limits may have changed.

Mean = mean of all monthly means in 2008
Max = mean of all measurements in the month with the highest mean value
Min = mean of all measurements in the month with the lowest mean value
mg/L = milligrams per liter
mL/L = milliliters per liter
µg/L = micrograms per liter

°F = degrees Fahrenheit
NTU = nephelometric turbidity unit
ND = non-detect
DNQ = detected but not quantified
N/A = not applicable

Source: Sanitation Districts 2009b:Table 4-2, Table 4-3

Los Coyotes Water Reclamation Plant

Effluent Discharge Location

Discharge from the LCWRP (LC001) is released to a lined reach of the San Gabriel River (San Gabriel River Reach 1, Figure 11-3) and flows several miles to the San Gabriel River Estuary near the river's confluence with Coyote Creek. LCWRP discharges vary, but are generally between 25 percent and

50 percent less than SJC001 discharges. The combined annual discharge of SJCWRP and LCWRP comprise approximately half of the dry weather flows in the San Gabriel River downstream of the LCWRP. This reach can run dry or have low flow from urban runoff depending on the operation of the WRPs and the infiltration at the spreading grounds upstream.

Effluent Water Quality

This section presents a summary of the physical, chemical, and biological characteristics of the effluent from the LCWRP. The NPDES permit for the LCWRP contains limits that are consistent with specific receiving water quality objectives of the Basin Plan and the SIP (SWRCB 2005). In addition to the NPDES permit, the LCWRP has water-recycling requirements. The water-recycling requirements for the WRPs contain limits consistent with specific water quality objectives for hydrologic subareas in the Basin Plan. The Basin Plan is discussed in Section 11.3.3.1.

The LCWRP NPDES permit includes approximately 7,800 numeric limitations that must be met each year based on quantitative results of final effluent and receiving water sampling and analysis. The permit also states that pollutants must not be present in wastes discharged at concentrations that pose a threat to groundwater quality. Additionally, the permit contains limits for total coliform bacteria, turbidity, radioactivity, and toxicity. A summary of some of the effluent characteristics monitored at the LCWRP for 2008 is presented in Table 11-9, along with the NPDES effluent limits applicable during that year. The water quality constituents are ordered in the table according to: (1) physical parameters, (2) chemical parameters and (3) emerging parameters of interest.

Table 11-9. LCWRP Effluent Water Quality for 2008

			2008 Effluent Monitoring Data		
Constituent	**Units**	**NPDES Permit Limit[a]**	**Mean**	**Max**	**Min**
pH		6.5 (min); 8.5 (max)	7.3	7.4	7.2
Turbidity	NTU	2 (24-hr composite)	0.7	0.8	0.6
Total Coliform	No./100 mL	2.2 (median of last 7 samples)		< 1	< 1
Temperature	^{o}F	86 (max)	80	85	74
Suspended Solids	mg/L	45 (daily max); 40 (weekly ave); 15 (monthly ave)	< 2.5	< 2.5	< 2.5
Settleable Solids	mL/L	0.3 (daily max); 0.1 (monthly ave)	< 0.1	< 0.1	< 0.1
Total Dissolved Solids	mg/L	N/A	837	980	756
Biochemical Oxygen Demand	mg/L	45 (daily max); 30 (weekly ave); 20 (monthly ave)	< 4	< 6	< 3
Ammonia Nitrogen	mg/L	4.9 (daily max); 2.1 (monthly ave)	1.3	1.86	0.82
Total Nitrogen	mg/L	N/A	9.21	10.45	6.7
Fluoride	mg/L	N/A	0.55	0.89	0.42
Boron	mg/L	N/A	0.456	0.54	0.392
Chloride	mg/L	N/A	196	232	170
Sulfate	mg/L	N/A	185	240	145
Total Hardness	mg/L	N/A	293	335	256
Arsenic	µg/L	N/A	0.28	1.13	DNQ 0.61
Cadmium	µg/L	N/A	ND	ND	DNQ 0.05
Total Chromium	µg/L	N/A	0.69	0.83	0.49
Copper	µg/L	28 (daily max); 15 (monthly ave)	2.01	3.28	1.3
Lead	µg/L	N/A	0.59	0.68	0.42

Table 11-9 (Continued)

Constituent	Units	NPDES Permit Limit[a]	2008 Effluent Monitoring Data		
			Mean	Max	Min
Mercury	µg/L	N/A	0.00376	0.008	0.0013
Selenium	µg/L	N/A	0.26	1.04	DNQ 0.54
Zinc	µg/L	N/A	41.8	47.7	36.9
N-Nitrosodimethylamine	µg/L	N/A	ND	ND	ND

[a] Board Order No. R4-2007-0048

Mean = mean of all monthly means in 2008
Max = mean of all measurements in the month with the highest mean value
Min = mean of all measurements in the month with the lowest mean value
mg/L = milligrams per liter
mL/L = milliliters per liter
µg/L = micrograms per liter
°F = degrees Fahrenheit
NTU = nephelometric turbidity unit
ND = non-detect
DNQ = detected but not quantified
N/A = not applicable

Source: Sanitation Districts 2009c:Table 4-2, Table 4-4

Long Beach Water Reclamation Plant

Effluent Discharge Location

The LBWRP discharges (LB001) to Coyote Creek immediately upstream of its confluence with the San Gabriel River (tributary to San Gabriel River Reach 1, Figure 11-3). Both the Coyote Creek and San Gabriel River channels are fully lined for many miles both up and downstream of the LBWRP discharge point. During the May to October 2008 dry season, the LBWRP contributed between 7 and 91 percent of the Coyote Creek flow, with a median contribution of about 43 percent.

Effluent Water Quality

This section presents a summary of the physical, chemical, and biological characteristics of the effluent from the LBWRP. The NPDES permit for the LBWRP contains limits that are consistent with specific receiving water quality objectives of the Basin Plan and the SIP (SWRCB 2005). In addition to the NPDES permit, the LBWRP has water-recycling requirements. The water-recycling requirements for the WRPs contain limits consistent with specific water quality objectives for hydrologic subareas in the Basin Plan. The Basin Plan is discussed in Section 11.3.3.1.

The LBWRP NPDES permit includes approximately 7,400 numeric limitations that must be met each year based on quantitative results of final effluent and receiving water sampling and analysis. The permit also states that pollutants must not be present in wastes discharged at concentrations that pose a threat to groundwater quality. Additionally, the permit contains limits for total coliform bacteria, turbidity, radioactivity, and toxicity. A summary of some of the effluent characteristics monitored at the LBWRP for 2008 is presented in Table 11-10, along with the NPDES effluent limits applicable during that year. The water quality constituents are ordered in the table according to: (1) physical parameters, (2) chemical parameters and (3) emerging parameters of interest.

Table 11-10. LBWRP Effluent Quality for 2008

Constituent	Units	NPDES Permit Limit[a]	2008 Effluent Monitoring Data		
			Mean	Max	Min
pH		6.5 (min); 8.5 (max)	7.6	7.7	7.5
Turbidity	NTU	2 (24-hr composite)	0.8	0.9	0.7
Total Coliform	No./100 mL	2.2 (median of last 7 samples)		< 1	< 1
Temperature	°F	86 (max)	77	83	72
Suspended Solids	mg/L	45 (daily max); 40 (weekly ave); 15 (monthly ave)	< 4	< 5	< 3
Settleable Solids	mL/L	0.3 (daily max); 0.1 (monthly ave)	< 0.1	< 0.1	< 0.1
Total Dissolved Solids	mg/L	N/A	613	740	558
Biochemical Oxygen Demand	mg/L	45 (daily max); 30 (weekly ave)[a]; 20 (monthly ave)	< 4	< 5	< 3
Ammonia Nitrogen	mg/L	4.2 (daily max); 1.8 (monthly ave)	1.21	1.82	0.85
Total Nitrogen	mg/L	N/A	8.15	10.51	5.27
Fluoride	mg/L	N/A	0.67	0.78	0.57
Boron	mg/L	N/A	0.42	0.59	0.341
Chloride	mg/L	N/A	120	134	110
Sulfate	mg/L	N/A	106	147	84.6
Total Hardness	mg/L	N/A	183	245	156
Arsenic	µg/L	N/A	3.09	3.66	2.79
Cadmium	µg/L	N/A	0.35	1.39	ND
Total Chromium	µg/L	N/A	ND	DNQ 0.30	DNQ 0.23
Copper	µg/L	20 (daily max); 18 (monthly ave)	2.1	3.3	1.1
Lead	µg/L	106 (daily max)	0.021	0.256	DNQ 0.13
Mercury	µg/L	N/A	0.0031	0.0098	0.0010
Selenium	µg/L	N/A	ND	DNQ 0.83	DNQ 0.34
Zinc	µg/L	156 (daily max)	43.5	49.1	31
N-Nitrosodimethylamine	µg/L	N/A	0.77	1.4	0.24

[a] Board Order No. R4-2007-0047

Mean = mean of all monthly means in 2008
Max = mean of all measurements in the month with the highest mean value
Min = mean of all measurements in the month with the lowest mean value
mg/L = milligrams per liter
mL/L = milliliters per liter
µg/L = micrograms per liter
°F = degrees Fahrenheit
NTU = nephelometric turbidity unit
ND = non-detect
DNQ = detected but not quantified
N/A = not applicable

Source: Sanitation Districts 2009d:Table 4-2, Table 4-4

Whittier Narrows Water Reclamation Plant

Effluent Discharge Location

The WNWRP discharges at different locations and into different receiving waters. WN001 discharges to an unlined reach of the San Gabriel River (San Gabriel River Reach 3, Figure 11-3) and contributes to the WRP-derived flows in that receiving water, while WN002 and WN004 contribute to flows in the Zone 1 Ditch (tributary to Rio Hondo Reach 2, Figure 11-3) and the Rio Hondo (Rio Hondo Reach 2, Figure 11-3), respectively. Only one of these discharges from the WNWRP is used at any given time, usually for a period of several weeks to several months, and then discharge shifts to one of the other points. When the WNWRP is discharging to the Rio Hondo, it represents the predominant source of flow in the river. A fourth discharge, WN003, discharged to Test Basin 1 for a study on using recycled water

for groundwater recharge. There has been no discharge through this point since July 31, 1981, and there is no plan to utilize this point in the foreseeable future.

Discharges from the WNWRP are greatly dependent upon flood control maintenance and other activities outside of the Sanitation Districts' control. Because of these types of constraints, the Sanitation Districts cannot ensure that flow will be discharged at any particular discharge point at a given time, and flows to any particular discharge point may be interrupted for an extended period of time.

Effluent Water Quality

This section presents a summary of the physical, chemical, and biological characteristics of the effluent from the WNWRP. The NPDES permit for the WNWRP contains limits that are consistent with specific receiving water quality objectives of the Basin Plan and the SIP (SWRCB 2005). In addition to the NPDES permit the WNWRP has water-recycling requirements and is regulated under the Montebello Forebay Groundwater Recharge Permit. The water-recycling requirements for the WRPs contain limits consistent with specific water quality objectives for hydrologic subareas in the Basin Plan. The Basin Plan is discussed in Section 11.3.3.1.

The WNWRP NPDES permit includes approximately 9,200 numeric limitations that must be met each year based on quantitative results of final effluent and receiving water sampling and analysis. The permit also states that pollutants must not be present in wastes discharged at concentrations that pose a threat to groundwater quality. Additionally, the permit contains limits for total coliform bacteria, turbidity, radioactivity, and toxicity. A summary of some of the effluent characteristics monitored at the WNWRP for 2008 is presented in Table 11-11, along with the NPDES effluent limits applicable during that year. The water quality constituents are ordered in the table according to: (1) physical parameters, (2) chemical parameters, and (3) emerging parameters of interest.

Table 11-11. WNWRP Effluent Quality for 2008

			2008 Effluent Monitoring Data		
Constituent	**Units**	**NPDES Permit Limit[a]**	**Mean**	**Max**	**Min**
pH		6.5 (min); 8.5 (max)	7.4	7.5	7.2
Turbidity	NTU	2 (24-hr composite)	0.7	0.9	0.5
Total Coliform	No./100 mL	2.2 (median of last 7 samples)		< 1	< 1
Temperature	^{o}F	100 (max)	77	83	72
Suspended Solids	mg/L	45 (daily max); 40 (weekly ave); 15 (mthly ave)	< 2.5	< 2.5	< 2.5
Settleable Solids	mL/L	0.3 (daily max); 0.1 (monthly ave)	< 0.1	< 0.1	< 0.1
Total Dissolved Solids	mg/L	750 (daily max)	564	642	506
Biochemical Oxygen Demand	mg/L	45 (daily max); 30 (weekly ave); 20 (monthly ave)	< 4	< 5	< 3
Ammonia Nitrogen	mg/L	Depends on temp and pH	1.2	1.52	0.89
Total Nitrogen	mg/L	N/A	1.4	2.1	0.93
Fluoride	mg/L	1.6 (monthly ave)	1.0	3.23	0.63
Boron	mg/L	1.0 (monthly ave)	0.33	0.42	0.267
Chloride	mg/L	180 (monthly ave)	112	117	102
Sulfate	mg/L	300 (monthly ave)	104	129	93
Total Hardness	mg/L	N/A	203	213	189
Arsenic	µg/L	50 (monthly ave)	1.31	1.61	1.07
Cadmium	µg/L	5 (monthly ave)	0.19	0.99	DNQ 0.08

Table 11-11 (Continued)

Constituent	Units	NPDES Permit Limit[a]	2008 Effluent Monitoring Data		
			Mean	Max	Min
Total Chromium	µg/L	N/A	0.97	1.84	0.81
Copper	µg/L	N/A	4.59	5.22	4.08
Lead	µg/L	50 (monthly ave)	0.45	0.61	0.36
Mercury	µg/L	0.10 (daily max); 0.051(monthly ave)	0.0030	0.0062	ND
Selenium	µg/L	10 (monthly ave)	ND	DNQ 0.53	DNQ 0.41
Zinc	µg/L	5000 (monthly ave)	60	73.1	52
N-Nitrosodimethylamine	µg/L	N/A	0.085	0.360	ND

[a] Board Order No. R4-2002-0142. This permit was in effect in 2008; however, a new NPDES permit was adopted in 2009. Therefore, current permit limits may have changed.

Mean = mean of all monthly means in 2008
Max = mean of all measurements in the month with the highest mean value
Min = mean of all measurements in the month with the lowest mean value
mg/L = milligrams per liter
mL/L = milliliters per liter
µg/L = micrograms per liter
°F = degrees Fahrenheit
NTU = nephelometric turbidity unit
ND = non-detect
DNQ = detected but not quantified
N/A = not applicable

Source: Sanitation Districts 2009e:Table 4-2, Table 4-4

Receiving Waters

Beneficial Uses

Beneficial uses are designated by the Regional Water Quality Control Board (RWQCB), and together with water quality objectives, form water quality standards. These water quality standards are used to protect water quality necessary for the survival or well-being of humans, plants, and wildlife. Beneficial uses in the Los Angeles Basin include potential, intermittent, and existing beneficial uses for both surface water and groundwater bodies. Beneficial uses are established by state regulations and are discussed in detail in Section 11.3.2; however, because they are established for specific physical surface waters and groundwater basins (collectively known as receiving waters), beneficial uses also describe certain desired environmental conditions. Beneficial uses are established to identify whether a receiving water is impaired and to assist with management of regulated discharges to receiving waters through the NPDES, administered under the Clean Water Act (CWA) (described in detail in Sections 11.3.1 and 11.3.2). To prevent downstream degradation of beneficial uses, tributaries without specified beneficial uses assume the beneficial uses of the downstream water. Beneficial uses for receiving waters of WRP effluent discharges are summarized in Table 11-12. Discharge points are mapped on Figure 11-3.

Table 11-12. Beneficial Uses at WRP Discharge Points

		Receiving Water		Beneficial Uses (Grey background indicates groundwater)		
WRP	**Discharge Point**	**Discharge Reach**	**Downstream Reach**	**Existing[a,d]**	**Intermittent[b,d]**	**Potential[c,d]**
SJCWRP[e]	SJC002	San Jose Creek Reach 1 (Hydro Unit 405.41)		WILD	GWR, REC-2, WARM	MUN[j], REC-1[k]
	SJC003	San Gabriel River Reach 3 (Hydro Unit 405.41)		WILD	GWR, REC-1[k], REC-2, WARM	MUN[j]
			Whittier Narrows Flood Control Basin (Zone 1 Ditch) (Hydro Unit 405.41)	GWR, REC-1, REC-2, WARM, WILD	None	MUN[j], RARE
	SJC001A	San Gabriel River Reach 2 (Hydro Unit 405.15)		RARE, REC-1[k], REC-2, WILD	GWR, WARM	IND, MUN[j], PROC
	SJC001	San Gabriel River Reach 1 (Hydro Unit 405.15)		REC-1[k], REC-2	None	MUN[j], WARM, WILD
			San Gabriel River Estuary (Hydro Unit 405.15)	COMM, EST, IND, MAR, MIGR, NAV, RARE, REC-1, REC-2, SPWN, WILD	None	SHELL
	SJC001 SJC001A	Central Basin (DWR-Basin 4-11)		AGR, IND, MUN, PROC	N/A	N/A
	SJC002 SJC003	San Gabriel Basin (DWR Basin 4-3)		AGR, IND, MUN, PROC	N/A	N/A
POWRP[e,i]	PO001	San Jose Creek Reach 2 (Hydro Unit 405.51)		WILD	GWR, REC-2, WARM	MUN[j], REC-1[k]
			San Jose Creek Reach 1 (Hydro Unit 405.41)	WILD	GWR, REC-2, WARM	MUN[j] REC-1[k]
			San Gabriel River Reach 3 (Hydro Unit 405.41)	WILD	GWR, REC-1[k], REC-2, WARM	MUN[j]
			San Gabriel River Reach 2 (Hydro Unit 405.15)	RARE, REC-1[k], REC-2, WILD	GWR, WARM	IND, MUN[j], PROC
LCWRP	LC001	San Gabriel River Reach 1 (Hydro Unit 405.15)		REC-1[k], REC-2	None	MUN[j], WARM, WILD
			San Gabriel River Estuary (Hydro Unit 405.15)	COMM, EST, IND, MAR, MIGR, NAV, RARE, REC-1, REC-2, SPWN, WILD	None	SHELL

Table 11-12 (Continued)

		Receiving Water		Beneficial Uses (Grey background indicates groundwater)		
WRP	**Discharge Point**	**Discharge Reach**	**Downstream Reach**	**Existing[a,d]**	**Intermittent[b,d]**	**Potential[c,d]**
LBWRP	LB001	Coyote Creek (Hydro Unit 405.15)		RARE	REC-2	IND, MUN[j], PROC, REC-1[k], WARM, WILD
			San Gabriel River Estuary (Hydro Unit 405.15)	COMM, EST, IND, MAR, MIGR, NAV, RARE, REC-1, REC-2, SPWN, WILD	None	SHELL
WNWRP[g, h]	WN001	San Gabriel River Reach 3 (Hydro Unit 405.41)		WILD	GWR, REC-1[k], REC-2, WARM	MUN[j]
			San Gabriel River Reach 2 (Hydro Unit 405.15)	RARE, REC-1[k], REC-2, WILD	GWR, WARM	IND, MUN[j], PROC
	WN002	Whittier Narrows Flood Control Basin (Zone 1 Ditch) (Hydro Unit 405.41)		GWR, REC-1, REC-2, WARM, WILD	None	MUN[j], RARE
	WN004	Whittier Narrows Flood Control Basin (Hydro Unit 405.41)		GWR, REC-1, REC-2, WARM, WILD	None	MUN[j], RARE
	WN002 WN004		Rio Hondo to Spreading Grounds (Hydro Unit 405.15)	REC-2	GWR, REC-1[k], WILD	MUN[j], WARM
			Rio Hondo Below Spreading Grounds (Hydro Unit 405.15)	REC-2	GWR, WILD	MUN, REC-1[k], WARM
	WN001 WN002 WN004	Central Basin (DWR-Basin 4-11)		AGR, IND, MUN, PROC	N/A	N/A

Beneficial uses can be designated for a waterbody in a number of ways. The definitions of Existing, Intermediate, and Potential Beneficial Uses defined in the LARWQCB Basin Plan (1994) are described below.

[a] Existing Beneficial Use: Those beneficial uses that have been attained for a waterbody on, or after, November 28, 1975, must be designated as "existing" in the basin plans.

[b] Intermittent Beneficial Use: Beneficial uses of streams that have intermittent flows, as is typical of many streams in Southern California, are designated as intermittent. During dry periods, however, shallow groundwater or small pools of water can support some beneficial uses associated with intermittent streams; accordingly, such beneficial uses (e.g., wildlife habitat) must be protected throughout the year and are designated "existing."

[c] Potential Beneficial Use: beneficial uses can be designated as "potential" for several reasons, including: implementation of the State Board's policy entitled "Sources of Drinking Water Policy" (Chapter 5 of State Board Resolution No. 88-63); plans to put the water to such use in the future; potential to put the water to such use in the future; designation of a use by the Regional Board as a regional water quality goal; or, public desire to put the water to such use in the future.

[d] Beneficial uses are coded as follows:

AGR = agricultural supply
COMM = commercial and sport fishing
EST = estuarine habitat
GWR = groundwater recharge
IND = industrial service supply
MAR = marine habitat
MIGR = migration of aquatic organisms
MUN = municipal and domestic supply
NAV = navigation
PROC = industrial process supply
RARE = rare, threatened, or endangered species
REC-1 = water contact recreation
REC-2 = non-contact water recreation
SHELL = shellfish harvesting
SPWN = spawning, reproduction, and/or early development
WARM = warm fresh water habitat
WET = wetland habitat
WILD = wildlife habitat

N/A = not applicable

[e] During peak flow events, a portion of San Gabriel River flow can be diverted to the Rio Hondo via the Zone 1 Ditch. At these

Table 11-12 (Continued)

WRP	Discharge Point	Receiving Water: Discharge Reach	Receiving Water: Downstream Reach	Beneficial Uses (Grey background indicates groundwater): Existing[a,d]	Intermittent[b,d]	Potential[c,d]

times, a portion of the diverted flow may contain effluent discharged from the POWRP or the SJCWRP and thus that effluent may enter the Los Angeles River basin via the Rio Hondo. However, such effluent represents an immeasurably small portion of the total flood flow and thus has no potential to affect beneficial uses in the Rio Hondo, Los Angeles River, or Los Angeles River Estuary.

[f] SJC001B is not included in this table because it has not been constructed.

[g] WNWRP effluent discharge is normally fully infiltrated at the San Gabriel Coastal or Rio Hondo Spreading Grounds. Effluent only enters the lower San Gabriel River, Los Angeles River, or their estuaries during flood events, at which times it represents an immeasurably small fraction of total streamflow and thus has no potential to affect beneficial uses.

[h] WN003 is not included in this table because it currently is not in service.

[i] POWRP discharges are normally fully infiltrated in unlined reaches of San Jose Creek, the San Gabriel River and at the San Gabriel Coastal Spreading Grounds. They are conveyed downstream to Reach 1 of the San Gabriel River and the estuary only during flood flows, at which times they represent an immeasurably small portion of streamflow and thus have no potential to affect beneficial uses.

[j] The potential municipal and domestic supply beneficial uses for the waterbody is consistent with the State Water Resources Control Board Order No. 88-63 and RWQCB Resolution No. 89-003; however, the RWQCB has only conditionally designated the MUN beneficial use and at this time cannot establish effluent limitations designed to protect the conditional designation.

For a complete list of beneficial uses for the basin, see the update to Chapter 2 of the LARWQCB Basin Plan (LARWQCB 2011).

[k] Access to lined reaches prohibited by Los Angeles County regulations.

Impaired Receiving Waters

The JOS service area includes several impaired receiving waters. These receiving waters are impaired due to a variety of pollutants and stressors generated by multiple sources. As described under the CWA in Section 11.3.1.1, a 303(d) list is developed by the RWQCB and approved by the United States (U.S.) Environmental Protection Agency (EPA) to identify impairments and potential sources. Once a waterbody is placed on the 303(d) List of Water Quality Limited Segments, it remains on the list until a Total Maximum Daily Load (TMDL) is adopted, and the water quality standards are attained or there are sufficient data to demonstrate that water quality standards have been met and delisting should take place. A TMDL is an allowable discharge target to reduce pollutant loading into receiving waters. A TMDL is supposed to be developed for each impairment listed on the 303(d) list in order for each receiving water to improve water quality; receiving waters may be removed from the 303(d) list once a TMDL has been developed.

Twelve waters on the 303(d) list receive effluent discharged from Sanitation Districts' WRPs, as shown in Table 11-13.

Table 11-13. Clean Water Act Section 303(d) List of Impaired Water Bodies in Reaches with WRP Discharge

CalWater Watershed Label	Name and Size	Pollutant/Stressor	Pollutant Category	Expected TMDL Completion Year	WRPs Upstream of Affected Reach
40531000	San Jose Creek Reach 2	Coliform Bacteria	Pathogens	2019	POWRP
40531000	San Jose Creek Reach 1	Ammonia	Nutrients	N/A	POWRP SJCWRP
		Coliform Bacteria	Pathogens	2009	
		Total Dissolved Solids	Salinity	2021	
		Toxicity	Toxicity	2019	
		pH	Miscellaneous	2021	

Table 11-13 (Continued)

CalWater Watershed Label	Name and Size	Pollutant/Stressor	Pollutant Category	Expected TMDL Completion Year	WRPs Upstream of Affected Reach
40515010	San Gabriel River Reach 2	Coliform Bacteria	Pathogens	2011	POWRP SJCWRP WNWRP
		Cyanide	Other inorganics	2021	
		Lead	Metals/Metalloids	N/A	
40515010	San Gabriel River Reach 1	Coliform Bacteria	Pathogens	2019	POWRP SJCWRP LCWRP LBWRP
		pH	Miscellaneous	2009	
40515010	Coyote Creek (13 miles)	Ammonia	Nutrients	N/A	LBWRP[a]
		Indicator Bacteria	Pathogens	2009	
		Copper, Dissolved	Metals/Metalloids	2006	
		Diazinon	Pesticides	2019	
		Lead	Metals/Metalloids	N/A	
		pH	Miscellaneous	2019	
		Toxicity (listing made by EPA in 2002)	Toxicity	2008	
40516000	San Gabriel River Estuary	Copper	Metals/Metalloids	N/A	SJCWRP LCWRP LBWRP
		Dioxin	Other Organics	2021	
		Nickel	Metals/Metalloids	2021	
		Oxygen, Dissolved	Nutrients	2021	
40515010	Rio Hondo Reach 2	Cyanide		2021	WNWRP[b]
		Coliform Bacteria	Pathogens	2009	
40515010	Rio Hondo Reach 1	Coliform Bacteria	Pathogens	2019	WNWRP[b]
		Copper	Metals/Metalloids	N/A	
		Lead	Metals/Metalloids	N/A	
		Toxicity	Toxicity	2021	
		pH	Miscellaneous	N/A	
		Trash	Trash	N/A	
		Zinc	Metals/Metalloids	N/A	
40515010	Los Angeles River (Carson Street to Figueroa Street; 11 miles)	Ammonia	Nonpoint/Point Source	N/A	WNWRP[b,c]
		Coliform Bacteria	Nonpoint/Point Source	2009	
		Copper	Source Unknown	N/A	
		Lead	Nonpoint/Point Source	N/A	
		Nutrients (algae)	Nonpoint/Point Source	N/A	
		Oil		2019	
		Trash	Source Unknown	N/A	
40512000	Los Angeles River (Estuary to Carson Street; 3.4 miles)	Ammonia	Nutrients	N/A	WNWRP[b,c]
		Cadmium	Metals/Metalloids	N/A	
		Coliform Bacteria	Pathogens	2009	
		Copper, Dissolved	Metals/Metalloids	N/A	
		Cyanide	Other Inorganics	2019	
		Diazinon	Pesticides	2019	
		Lead	Metals/Metalloids	N/A	
		Nutrients (algae)	Nutrients	N/A	
		pH	Miscellaneous	2003	

Table 11-13 (Continued)

CalWater Watershed Label	Name and Size	Pollutant/Stressor	Pollutant Category	Expected TMDL Completion Year	WRPs Upstream of Affected Reach
		Trash	Trash	N/A	
		Zinc, Dissolved	Metals/Metalloids	N/A	
40512000	Los Angeles River Estuary (207 acres)	Chlordane (sediment)	Pesticides	2019	WNWRP[b,c]
		DDT (sediment)	Pesticides	2019	
		PCBs (polychlorinated biphenyls) (sediment)	Other Inorganics	2019	
		Sediment Toxicity	Toxicity	2019	
		Trash	Trash	N/A	
40518000	Los Angeles/Long Beach Cabrillo Marina (77 acres)	Benzo(a)pyrene (3,4-Benzopyrene-7-d)	Other Organics	2021	WNWRP[b,c]
		DDT	Pesticides	2019	
		PCBs	Other Organics	2019	
40512000	Los Angeles Harbor – Consolidated Slip (36 acres)	2-Methylnaphthalene	Other Organics	2008	WNWRP[b,c]
		Benthic Community Effects	Miscellaneous	2019	
		Benzo(a)pyrene (3,4-Benzopyrene-7-d)	Other Organics	2008	
		Benzo[a]anthracene	Other Organics	2019	
		Cadmium (sediment)	Metals/Metalloids	2019	
		Chlordane (tissue and sediment)	Pesticides	2019	
		Chromium (sediment)	Metals/Metalloids	2019	
		Chrysene (C1-C4)	Other Organics	2008	
		Copper (sediment)	Metals/Metalloids	2019	
		DDT (tissue and sediment)	Pesticides	2019	
		Dieldrin	Pesticides	2008	
		Lead (sediment)	Metals/Metalloids	2019	
		Mercury (sediment)	Metals/Metalloids	2019	
		PCBs (tissue and sediment)	Other Organics	2019	
		Phenanthrene	Other Organics	2008	
		Pyrene	Other Organics	2008	
		Sediment Toxicity	Toxicity	2019	
		Toxaphene (tissue)	Pesticides	2019	
		Zinc (sediment)	Metals/Metalloids	2019	
40518000	Los Angeles Harbor – Fish Harbor (91 acres)	Benzo(a)pyrene (3,4-Benzopyrene-7-d)	Other Organics	2019	WNWRP[b,c]
		Benzo[a]anthracene	Other Organics	2019	
		Chlordane	Pesticides	2019	
		Chrysene (C1-C4)	Other Organics	2019	
		Copper	Metals/Metalloids	2019	
		DDT	Pesticides	2019	
		Dibenz[a,h]anthracene	Other Organics	2019	
		Lead	Metals/Metalloids	2019	

Table 11-13 (Continued)

CalWater Watershed Label	Name and Size	Pollutant/Stressor	Pollutant Category	Expected TMDL Completion Year	WRPs Upstream of Affected Reach
		Mercury	Metals/Metalloids	2019	
		PAHs (Polycyclic Aromatic Hydrocarbons)	Other Organics	2019	
		PCBs	Other Organics	2019	
		Phenanthrene	Other Organics	2019	
		Pyrene	Other Organics	2019	
		Sediment Toxicity	Toxicity	2019	
		Zinc	Metals/Metalloids	2019	
40512000	Los Angeles Harbor – Inner Cabrillo Beach Area (82 acres)	DDT	Pesticides	2019	WNWRP[b,c]
		Indicator Bacteria	Pathogens	N/A	
		PCBs	Other Organics	2010	

[a] The LBWRP is located at the mouth of Coyote Creek.

[b] During peak flow events, a portion of San Gabriel River flow can be diverted to the Rio Hondo via the Zone 1 Ditch. At these times, a portion of the diverted flow may contain effluent discharged from the POWRP or the SJCWRP and thus that effluent may enter the Los Angeles River basin via Rio Hondo. However, such effluent represents an immeasurably small portion of the total flood flow.

[c] WNWRP effluent discharge is normally fully infiltrated at the San Gabriel Coastal and Rio Hondo Spreading Grounds. Effluent only enters the lower portions of the San Gabriel River and Los Angeles River during flood events, at which times it represents an immeasurably small fraction of total streamflow.

N/A = not applicable

Source: State Water Resources Board 2010 (2010 Integrated Report)

Soils

Sedimentation and erosion impacts are related to soils, slope, and the depth to groundwater at each program element location. Soil types present at each WRP are shown in Table 11-14. This table synthesizes applicable information from Chapter 8. As discussed in Chapter 10, none of the WRPs are known to have existing soil or groundwater contamination.

Table 11-14. Soil Characteristics at the WRPs

Facility	Approximate Depth to Groundwater (feet)	Landslide Hazard Area	Soil Association	Soil Type	Slope (%)	Erosion Potential
SJCWRP	3–5	No	Hanford	Sandy loam	0	Low
POWRP	20–30	Yes	Hanford	Sandy loam	0	Low
LCWRP	Potentially shallow; can vary up to 35 feet	No	Hanford	Sandy loam	0	Low
			Yolo	Silty loam	0	Low
			Macho-Sorrento	Silty loam	2.9	Low-moderate
			Cropley	Clay	0	Low
			Foster	Sandy loam	0	Low
LBWRP	20–25	No	Chino (with inclusions of the Foster and Grangeville Associations	Clay loam	0	Low

Table 11-14 (Continued)

Facility	Approximate Depth to Groundwater (feet)	Landslide Hazard Area	Soil Association	Soil Type	Slope (%)	Erosion Potential
WNWRP	Shallow	No	Oceano	Sand	2–5	Moderate-high
			Marina-Carey	Sand and sandy loam	2–15	High
			Tujunga-Sobaba	Fine sand and fine sandy loam	0–5	Low-moderate
			Chino (with inclusions of the Foster and Grangeville Associations	Clay loam	0	Low

Source: Tables 8-5 and 8-6

Joint Water Pollution Control Plant

The JWPCP is located in the Dominguez Channel Watershed and overlies the West Coast Basin. The JWPCP is located in the Machado Lake Subwatershed, and the major waterway in the watershed is Wilmington Drain. The receiving water for the JWPCP is the Pacific Ocean.

The soil types present at the JWPCP are shown in Table 11-15. This table synthesizes applicable information from Chapter 8.

Table 11-15. Soil Characteristics at the JWPCP

Facility	Approximate Depth to Groundwater (feet)	Landslide Hazard Area	Soil Association	Soil Type	Slope (%)	Erosion Potential
JWPCP	35–40	No	Agoura-Placentia	Sandy loam	2–5	Low-Moderate
			Agoura-Placentia	Sandy loam	5–9	Moderate
			Ramona-Placentia	Sandy loam	9–15	High
			Perkins-Rincon	Gravelly loam and silty clay loam	0–15	Low-Moderate
			Vista-Amargoss	Sandy loam	30–50	High
			Oak Glen-Gorman	Sandy loam	9–30	Moderate-High
			Diablo-Altamont	Clay	2–9	Low
			Altamont-Diablo	Clay	9–30	High
			Altamont-Diablo	Clay	30–50	High
			San Andreas-San Benito	Sandy loam and clay loam	30–75	High
			San Benito-Soper	Clay loam	30–50	High
			Beaches	Sand	Varies	Very High

Source: Tables 8-5 and 8-6

11.2.3 Project Setting

11.2.3.1 Groundwater Basins and Watersheds

The project elements are located in the groundwater basins and watersheds described in Sections 11.2.1.1 and 11.2.1.2. The location of each project element within the various watersheds, subwatersheds, and groundwater basins is summarized in Table 11-16. Project elements associated with the marine environment of the Pacific Ocean are discussed in Chapter 13 with the exception of tsunami effects on the riser/diffuser area (i.e., SP Shelf, PV Shelf, and existing ocean outfalls), which are included in this chapter.

Table 11-16. Project Elements and Water Resources

Project Element	Watershed	Subwatershed	Groundwater Basin
Tunnel Alignment			
Wilmington to SP Shelf	Dominguez Channel	The northern portion of the alignment (from the JWPCP East shaft site to Anaheim Street) is in the Machado Lake Subwatershed. The southern portion of the alignment (from Anaheim Street to the Southwest Marine shaft site) is in the Los Angeles Harbor Subwatershed.	West Coast Basin and crosses the Dominguez Gap Barrier Project.
Wilmington to PV Shelf	Dominguez Channel	Same as for Wilmington to SP Shelf	Same as for Wilmington to SP Shelf
Figueroa/Gaffey to PV Shelf	Dominguez Channel	The northern portion of the alignment (from the JWPCP West shaft site to Anaheim Street) is in the Machado Lake Subwatershed. The southern portion of the alignment (from Anaheim Street to the Angels Gate shaft site) is located in the Los Angeles Harbor Subwatershed.	A portion of the alignment (from the JWPCP West shaft site to approximately Summerland Avenue) overlays the West Coast Basin. The remaining portion of the alignment does not traverse a groundwater basin.
Figueroa/Western to Royal Palms	Dominguez Channel	The northern portion of the alignment (from the JWPCP West shaft site to approximately Anaheim Street) is in the Machado Lake Subwatershed. The southern portion of the alignment (from Anaheim Street to the Royal Palms shaft site) is located in the Los Angeles Harbor Subwatershed.	A portion of the alignment (from the JWPCP West shaft site to approximately Capitol Drive) overlays the West Coast Basin. The remaining portion of the alignment does not traverse a groundwater basin.
Shaft Site			
JWPCP East	Dominguez Channel	Machado Lake Subwatershed	West Coast Basin
JWPCP West	Dominguez Channel	Machado Lake Subwatershed	West Coast Basin
TraPac	Dominguez Channel	Los Angeles Harbor Subwatershed	West Coast Basin
LAXT	Dominguez Channel	Los Angeles Harbor Subwatershed	West Coast Basin
Southwest Marine	Dominguez Channel	Los Angeles Harbor Subwatershed	West Coast Basin
Angels Gate	Dominguez Channel	Los Angeles Harbor Subwatershed	None
Royal Palms	Santa Monica Bay[a]	Lower Santa Monica Bay Peninsula Subwatershed[b]	None

[a] The Santa Monica Bay (Ballona Creek) Watershed drains approximately 130 square miles of the western portion of the Los Angeles Basin including most of the city of Los Angeles west of downtown (and generally south of Mulholland Drive); the cities of Beverly Hills, Culver City, West Hollywood, portions of Santa Monica, Inglewood and portions of the Hollywood Hills; and Santa Monica Mountains. The watershed is highly urbanized.

[b] The Lower Santa Monica Bay Peninsula Subwatershed stretches from Playa Del Rey to Palos Verdes and drains 39.9 square miles into Santa Monica Bay. There are no large open channels that drain this watershed. (California State University Sacramento, Caltrans, and Office of Water Programs 2010.)

Source: MEC 2004.

Two of the groundwater basins adjacent to the coast and identified in Table 11-3 have experienced seawater intrusion. The two basins are the Central Basin and the West Coast Basin. Seawater intrusion can occur in areas where recent or active river systems have eroded through geological features (in this case the Newport Inglewood uplift), which results in mixing between the potable fresh water of the aquifer and seawater, thus reducing the availability of potable fresh water. This condition has been exacerbated by excessive pumping from the aquifer, effectively drawing in seawater. Of the three seawater injection barriers within Los Angeles County, the Dominguez Gap Barrier Project (Figure 11-1) is the second largest barrier. The barrier is owned and operated by the Public Works Flood Maintenance and Water Resources Divisions of the LACDPW (LACDPW 2010d.) It extends approximately 12 miles from F Street to E Street along the Dominguez Channel. It operates to prevent seawater intrusion into coastal aquifers, and consists of 94 injection wells and over 200 observation wells (Cheng and Ouazer 2004). The injection wells are typically 1,000 feet apart and range in depths from about 140 to 460 bgs (Cheng and Ouazer 2004). Fresh water (both imported and recycled) is injected through the injection wells into the aquifers. Injection wells are either single (injects fresh water into one aquifer) or dual (injects fresh water into two aquifers; a shallower upper and a deeper lower aquifer) (LACDPW 2010e). Approximately 1,700 AF of recycled water and approximately 3,790 AF of imported water was injected into the Dominguez Gap barrier in fiscal year 2007[3] (DWR 2008). Sources of water for the barrier include the Terminal Island Water Reclamation Plant, the Water Replenishment District, and potentially in the future, the West Basin Municipal Water District (West Basin Municipal Water District 2010).

Hydrogeological characteristics have the potential to affect the construction and operation of the shaft sites and, therefore, are summarized in Table 11-17. The impacts of physical characteristics on the shaft sites are evaluated in Section 11.4. Details of the shaft sites are presented in Chapter 3.

Table 11-17. Hydrogeological Characteristics at the Shaft Sites

Shaft Site[a]	Approximate Shaft Depth (feet bgs)	Approximate Depth to Groundwater (feet bgs)	Landslide Hazard Area	Geologic Formation	Drainage
JWPCP East	115	25–30	No	Surface fill soils over Pleistocene (Lakewood Formation) sediment deposits of alluvial sands, silts, and clays	Pervious surface allows stormwater to infiltrate into ground; any sheet flow generated would run into the adjacent gutters and stormdrain system.
JWPCP West	115 (Alternative 3) 140 (Alternative 4)	35–40	No	Surface fill soils over Pleistocene (Lakewood Formation) sediment deposits of alluvial sands, silts, and clays	
TraPac	165	15	No	15 feet of artificial fill over alluvial and marine sediments of the Lakewood Formation and San Pedro Sand	Impervious surface generates sheet flow that drains into stormdrain system and into the harbor.
LAXT	170	10	No	Artificial fill over Holocene (Lakewood Formation) sediment deposits	
Southwest Marine	170	10	No	Artificial fill over Holocene sediment deposits and Timms Point Silt; Malaga Mudstone and Monterey Formation at depths greater than the shaft	

[3] Department of Water Resources collects data for the Watermaster Service in the West Coast Basin in fiscal years. These volumes were recorded between July 1, 2007 and June 30, 2008.

Table 11-17 (Continued)

Shaft Site[a]	Approximate Shaft Depth (feet bgs)	Approximate Depth to Groundwater (feet bgs)	Landslide Hazard Area	Geologic Formation	Drainage
Angels Gate	245	155	No	Fluvial sediments of dense sands and hard clays over the Altimira shale member of the Monterey Formation	Impervious surface generates sheet flow that drains into the stormdrain system and outlets into the Pacific Ocean.
Royal Palms	50	12	No	Altimira shale member of the Monterey Formation	Pervious surface that infiltrates into the ground; any sheet flow generated would drain into the Pacific Ocean.

[a] This chapter contains analysis of impacts on fresh water only. Water quality and hydrology associated with marine project components (the riser/diffuser areas and existing ocean outfalls) are presented in Chapter 13, with the exception of a discussion of tsunamis in this chapter.

11.2.3.2 Stormwater Drainage Systems

This chapter and Chapter 20 both discuss stormwater drainage systems and facilities. A summary of drainage systems relevant to hydrology is provided in this section.

The Wilmington Drain, a stormdrain and flood control channel in the Dominguez Channel system, runs between the JWPCP and I-110. The Wilmington Drain is part of the Machado Lake ecosystem, which functions as a flood control system. The upper basin of Machado Lake contains a 40-acre recreational lake created by the impoundment of stormwater runoff; the lower basin is a fresh water marsh of approximately 60 acres. During major storms, stormwater flows over the dam into the lower basin and to the harbor outfall, which conveys runoff in an underground stormdrain to the West Basin of the Port of Los Angeles. (LACDPW 2008b.) The Wilmington Drain has a 150-foot-wide soft bottom vegetated channel with non-native plants and rip-rap-filled gabions north of Pacific Coast Highway. North of I-110 (near Lomita Boulevard), the drain is concrete-lined. Currently, the abundance of vegetation in the Wilmington Drain impedes the ability to convey a 50-year storm from I-110 past Pacific Coast Highway, but the city of Los Angeles is currently developing a project to improve the capacity of the unlined section of the drain.

The Dominguez Channel is a major stormdrain in the region. This channel is generally located to the north of I-405 and the JWPCP and east of I-110 and the JWPCP. It begins at 116th Street in the city of Hawthorne and continues in a southwesterly direction until it empties into the Consolidated Slip and East Turning Basin at the Port of Los Angeles. Some reaches of the channel are unlined, but it is primarily constructed of concrete. The concrete portion varies between a vertical-sided channel and a trapezoidal channel. The bottom of the channel is between 75 and 90 feet wide. The channel is designed to handle 50-year storm events. (MEC 2004.)

11.2.3.3 Tsunamis

Several of the project elements are located within the designated tsunami zone for Southern California. These include the following: the Trans Pacific Container Service Corporation (TraPac), Southwest Marine, and Los Angeles Export Terminal (LAXT) shaft sites; and the San Pedro Shelf (SP Shelf), Palos Verdes Shelf (PV Shelf), and existing ocean outfalls riser/diffuser areas. Tsunamis are gravity waves of

long wavelength generated by a sudden disturbance in a body of water. Typically, oceanic tsunamis are the result of sudden vertical movement along a fault rupture in the ocean floor, submarine landslides or subsidence, or volcanic eruption. Sudden displacement of water may set off transoceanic waves with wavelengths of up to 125 miles and with periods generally from 5 to 60 minutes. The trough of the tsunami wave arrives first, leading to the classic retreat of water from the shore as the ocean level drops. This is followed by the arrival of the crest of the wave, which can run up on the shore in the form of bores or surges in shallow water or simple rising and lowering of the water level in relatively deeper water such as in harbor areas.

Tsunamis are a relatively common natural hazard, although most of the events are small in amplitude and not particularly damaging. However, in the event of a large submarine earthquake or landslide, coastal flooding may be caused by either run-up of broken tsunamis in the form of bores and surges or by relatively dynamic flood waves. As has been shown historically, the potential loss of human life in the process can be great if such events occur in populated areas.

Abrupt sea-level changes associated with tsunamis in the past have reportedly caused damage to moored vessels within the outer portions of the Los Angeles Harbor. However, more recent studies (e.g., Synolakis et al. 1997; Borrero et al. 2001; Borrero et al. 2005) have projected larger tsunami run-ups based on near-field events, such as earthquakes or submarine landslides occurring in proximity to the California coastline. Offshore faults present a larger local tsunami hazard than previously thought, posing a direct threat to nearshore facilities. For example, the Santa Catalina Escarpment Fault, which lies south of Catalina Island, is located only 22 miles from the Port of Los Angeles. Simulations of tsunamis generated by uplift on this fault suggest waves in the port in excess of 12 feet, with an arrival time of within 20 minutes (Legg et al. 2004; Borrero et al. 2005). These simulations were based on rare events representing worst-case scenarios.

In addition, a landslide-derived tsunami is now perceived as a viable local tsunami hazard. Although many submarine landslides have been mapped off the Southern California shore, few appear to be of the scale necessary to generate a catastrophic tsunami. Of two large landslides that appear to be of this magnitude, Legg et al. (2004) indicated that one landslide is over 100,000 years old, and the other landslide is approximately 7,500 years old. In contrast, the recurrence of 3- to 20-foot fault movements on offshore faults would be in the several hundred- to several thousand-year range. Given that the frequency of fault movements on offshore faults is greater than that of submarine landslides, the study concludes that the most likely direct cause of most of the local tsunamis in Southern California would be tectonic movement during large offshore earthquakes.

A model has been developed specifically for the Los Angeles/Long Beach Port Complex that incorporates consideration of the localized landfill configurations, bathymetric features, and the interaction of the diffraction, reflection, and refraction of tsunami wave propagation in the predictions of tsunami wave heights (Moffatt and Nichol 2007). The port complex uses a model (Moffatt and Nichol 2007) with a methodology similar to the above studies to generate a tsunami wave from several different potential sources, including local earthquakes, remote earthquakes, and local submarine landslides. This model indicates that a reasonable maximum source for future tsunami events at the project sites would either be a Magnitude 7 earthquake on the Santa Catalina Escarpment Fault or a submarine landslide along the nearby Palos Verdes Peninsula.

11.3 Regulatory Setting

A variety of federal, state, and local agencies have jurisdiction over the program and project area. Important agencies and statutory authorities relevant to water quality, hydrology, and human health as they relate to the project are outlined in this section.

11.3.1 Federal

11.3.1.1 Clean Water Act

The CWA sets discharge limitations to receiving waters; requires states to establish and enforce water quality standards; initiates the NPDES permit program for municipal and industrial point-source discharges; and requires NPDES permits for municipal and industrial discharges, and for stormwater discharges caused by general construction activity.

CWA Section 404 requires that discharges of pollutants from point sources to waters of the United States (waters of the U.S.) be regulated. Section 401 of the CWA requires that any discharge of dredged or fill material into waters of the U.S. not violate state water quality standards.

CWA Section 303(d) requires that the state identify a list of impaired waterbodies and develop and implement TMDLs for these waterbodies (33 United States Code [USC] Section 1313(d)(1)). A TMDL specifies the maximum amount of a pollutant that can be discharged into a waterbody while still meeting applicable water quality standards and protecting beneficial uses. See Section 11.3.3.1 for additional details.

CWA Section 402 regulates discharges to surface waters through the NPDES program, which is administered by the EPA. In California, the State Water Resources Control Board (SWRCB) is authorized by the EPA to oversee the NPDES program through the RWQCBs (see related discussion under the Porter-Cologne Water Quality Control Act in Section 11.3.2.1). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits.

11.3.1.2 California Toxics Rule

On May 18, 2000, the EPA established numeric criteria for priority toxic pollutants for the state of California (California Toxics Rule [CTR] 65 CFR 31682 [40 CFR 131.38]) for the protection of human health and aquatic life. These apply as ambient water quality criteria for inland surface waters, enclosed bays, and estuaries. The SWRCB adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California – 2000, on March 2, 2000, for implementation of the CTR (State Board Resolution No. 2000-15 as amended by Board Resolution No. 2000-030). This policy requires that discharges comply with TMDL-derived load allocations.

11.3.1.3 Pretreatment Program Regulations

The general pretreatment regulations, adopted as part of the CWA (40 Code of Federal Regulations [CFR] 403), require that municipal treatment plants regulate nonresidential waste discharges into public sewers. The regulations give operators of treatment plants the authority to prohibit or limit discharges of any pollutant that could pass through the treatment processes into receiving waters, interfere with treatment plant operations, or limit biosolids disposal options. The general pretreatment regulations also establish categorical pretreatment standards that regulate sewer discharges from specific types of industries.

The Sanitation Districts' pretreatment program began in 1972 with the adoption of the wastewater ordinance. In 1975, local effluent limits were established for industrial wastewater discharges, which were initially imposed to assist in meeting the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) standards included in the regional water quality control plan. Adoption and enforcement of local discharge limits and federal categorical standards are now a required part of the pretreatment program Jones & Stokes 1994). The Sanitation Districts' pretreatment program was approved by the EPA and the RWQCB in March 1985. The entire JOS service area is required to participate in the pretreatment program.

These numerical limits for nonresidential discharge to the sewer system and the authority provided by the wastewater ordinance form the basis for controlling the discharge of toxic compounds and other constituents of concern that are difficult to remove using conventional wastewater treatment processes from industrial sources. Implementation of the pretreatment program has enabled the Sanitation Districts to consistently meet NPDES permit limits at JOS treatment facilities. Monitoring and sampling are conducted for various organic compounds such as phenols, chlorinated hydrocarbons, and cyanide.

11.3.1.4 Executive Order 11988

Executive Order 11988 (Floodplain Management) addresses floodplain issues related to public safety, conservation, and economics. It requires federal agencies that intend to construct, permit, or fund projects within floodplains to:

- Avoid incompatible floodplain development
- Be consistent with the standards and criteria of the National Flood Insurance Program (NFIP)
- Restore and preserve natural and beneficial floodplain values

11.3.2 State

11.3.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Act established the SWRCB and divided the state into nine regional basins, each with its own RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface water and groundwater supplies.

The Porter-Cologne Water Quality Act authorizes the SWRCB to draft state policies regarding water quality. It also authorizes the SWRCB to issue waste discharge requirements (WDRs) for discharges to state waters. The SWRCB, or one of the nine RWQCBs under the SWRCB, is required to adopt water quality control plans (basin plans) for the protection of water quality. A basin plan must:

- Identify the beneficial uses of the water to be protected
- Establish water quality objectives for the reasonable protection of the beneficial uses
- Establish a program of implementation for achieving the water quality objectives

These plans also provide the technical basis for determining WDRs, taking enforcement actions, and evaluating clean water grant proposals. Basin plans are updated and reviewed every 3 years. NPDES permits issued to control pollution must implement requirements of the applicable regional basin plans (see Section 11.3.3 for additional discussion of NPDES and the regional basin plans).

11.3.2.2 State Water Resources Control Board Recycled Water Policy

With Resolution No. 2009-0011, the SWRCB adopted the Recycled Water Policy for the state of California (SWRCB 2009). This policy strongly encourages local and regional water agencies to optimize their use of local water sources by emphasizing water recycling, water conservation, and the maintenance of supply infrastructure and use of stormwater (including dry-weather urban runoff). To achieve this, the policy adopts the following goals for California:

- Increase the use of recycled water over 2002 levels by at least 1 million AFY by 2020 and by at least 2 million AFY by 2030
- Increase the amount of water conserved in urban and industrial use in comparison to 2007 by at least 20 percent by 2020
- Substitute as much recycled water for potable water as possible by 2030

The purpose of this policy is to increase the use of recycled water[4], including that from municipal wastewater sources. The policy specifically identifies the use of recycled water as having a beneficial impact because it supports the sustainable use of groundwater and/or surface water and substitutes for the use of potable water. The policy mandates the use of recycled water as follows:

- The SWRCB established mandates to increase the use of recycled water in California by 200,000 AFY by 2020 and by an additional 300,000 AFY by 2030. These mandates will be achieved through the cooperation and collaboration of the SWRCB, the RWQCBs, the environmental community, water purveyors, and the operators of publicly owned treatment works. The SWRCB will evaluate progress toward these mandates biennially and review and revise the implementation provisions of the policy as necessary in 2012 and 2016.
- Agencies producing recycled water that is available for reuse and is not being put to beneficial use will make that recycled water available to water purveyors for reuse on reasonable terms and conditions.
- The SWRCB declares that pursuant to Water Code Section 13550 et seq., it is wasteful and an unreasonable use of water if recycled water is available and not put to beneficial use in lieu of potable water.

The policy identifies the roles of the SWRCB and the RWQCBs in encouraging, promoting, and requiring the use of recycled water. The RWQCBs are to cooperate and collaborate to increase the use of recycled water in their jurisdictions and will use their authority to the fullest extent possible to encourage the use of recycled water. The SWRCB is responsible for establishing general policies governing the permitting of recycled water projects consistent with its role of protecting water quality and sustaining water supplies and will lead the effort to meet the recycled water use goals.

[4] Defined per Water Code Section 13050(n): "Recycled water means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource."

Finally, the policy provides a list of incentives for the use of recycled water. The policy encourages the use of TMDLs to provide an incentive to use recycled water. Because water recycling reduces mass loadings from municipal wastewater sources and the receiving waters to which they discharge, TMDLs should be assigned by the RWQCB in a manner that provides an incentive for greater water recycling (SWRCB 2009).

11.3.2.3 California Code of Regulations, Title 23

Title 23 of the California Code of Regulations (CCR) establishes the California Water Code, which governs the use of water in the state. It states that water resources must be put to beneficial use to the fullest extent of which they are capable, and that the waste, unreasonable use, or unreasonable method of use of water is illegal. It identifies that the conservation of water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare. There are several sections under the California Water Code (which are summarized in this section) that are particularly applicable to wastewater treatment facilities.

Section 1210 of the California Water Code regulates the ownership of recycled water. This section states that between the owner of the wastewater treatment plant and the entities contributing to the wastewater into the collection system, the owner of the treatment plant has exclusive rights to recycled water.

Section 1211 defines actions that must be taken if points of discharge are to be changed or use of discharge is to change. Prior to making any change in the point of discharge, place of use, or purpose of use of recycled water, the owner of any wastewater treatment plant shall obtain approval of the SWRCB for that change through a petition process. The board will review the changes pursuant to the provisions of Chapter 10. This does not apply to changes in the discharge or use of recycled water that do not result in decreasing the flow in any portion of a watercourse.

Section 13050 defines pollution, contamination, and nuisance as they relate to receiving waters in the state of California as follows.

> *Pollution* means an alteration of the quality of the waters of the state by waste to a degree that unreasonably affects either of the following:
>
> - The waters for beneficial uses
> - Facilities which serve these beneficial uses
>
> Pollution may include contamination.
>
> *Contamination* means an impairment of the quality of the waters of the state by waste to a degree [that] creates a hazard to public health through the spread of disease. This includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.
>
> *Nuisance* means anything that meets all of the following requirements:
>
> - Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
> - Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon the individuals may be unequal.

- Occurs during, or as a result of, the treatment or disposal of wastes.

Section 13510 declares that the people of the state have a primary interest in the development of facilities to recycle water containing waste to supplement existing surface and underground water supplies and to assist in meeting the future water requirements of the state. Section 13550 et seq. strengthens this by stating that under certain conditions, the use of potable water for nonpotable purposes (landscape irrigation) is a waste or unreasonable use of water if recycled water is available.

11.3.2.4 California Code of Regulations, Title 22, Division 4, Chapter 15

Title 22, Division 4, Chapter 15 regulates and monitors the water quality of domestic water supplies. This regulation includes standards and maximum levels for groundwater constituents that must be tested by water purveyors that pump groundwater using wells and distribute that water as a potable water supply to customers.

11.3.2.5 California Code of Regulations, Title 22, Division 4, Chapter 3

Title 22, Division 4, Chapter 3 Water Recycling Criteria, governs the use of recycled water throughout the state of California, and were last updated in December 2000. The Water Recycling Criteria are not directly applied to any specific water recycling project; rather, they are incorporated in water reclamation requirements issued by the local RWQCB.

11.3.2.6 California General Construction Permit

Construction activities are regulated under the latest NPDES General Permit for Discharges of Stormwater Runoff Associated With Construction Activity (General Construction Permit), or CAS000002, provided that the total amount of ground disturbance during construction is 1 acre or more. The Los Angeles RWQCB (LARWQCB) enforces the General Construction Permit. Coverage under the General Construction Permit requires preparation of a stormwater pollution prevention plan (SWPPP) and a notice of intent (NOI). The SWPPP includes pollution-prevention measures (measures to control erosion, sediment, and non-stormwater discharges and hazardous spills); demonstration of compliance with all applicable local and regional erosion and sediment control standards; identification of responsible parties; a detailed construction timeline; and a best management practices (BMPs) monitoring and maintenance schedule. The NOI includes site-specific information and certification of compliance with the terms of the General Construction Permit.

11.3.3 Regional

11.3.3.1 Los Angeles Regional Water Quality Control Board

The Clearwater Program is located within the jurisdiction of the LARWQCB. The LARWQCB provides for the development and periodic review of basin plans that designate the beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. Beneficial uses represent the services and qualities of a waterbody (i.e., the reasons why the waterbody is considered valuable), while water quality objectives represent the standards necessary to protect and support those beneficial uses. Basin plans are implemented primarily by using the NPDES permitting system. They include TMDLs adopted to regulate waste discharges so that water quality objectives are met (see discussion of the NPDES system in Section 11.3.1.1). Basin plans are updated every 3 years and provide the technical basis for determining WDRs and taking enforcement actions.

One method the LARWQCB uses to implement basin plan criteria is through the issuance of WDRs, which are issued to any entity that discharges point-source effluent to a surface waterbody. The WDR permit also serves as a federally required NPDES permit (under the CWA) and incorporates the requirements of other applicable regulations.

The EPA entered into a consent decree with the Natural Resources Defense Council, Heal the Bay, and the Santa Monica Bay Keeper on March 22, 1999, under which the LARWQCB must adopt TMDLs for all impairments existing at the time in the Los Angeles region, within 13 years from that date. The expected TMDL completion year for impaired water bodies with WRP discharges on the 303(d) list are summarized in Table 11-13.

Beneficial Uses

The LARWQCB has set beneficial uses for surface waters, groundwaters, coastal waters, and wetlands under its jurisdiction. Beneficial uses are designated to protect water quality necessary for the survival or well-being of humans, plants, and wildlife, and are determined by the RWQCB and identified in a basin plan. Beneficial uses in the Water Quality Control Plan for the Los Angeles Region (Basin Plan) include potential, intermittent, and existing beneficial uses for both surface water and groundwater bodies. To ensure downstream degradation of beneficial uses does not occur, tributaries without specified beneficial uses assume the beneficial uses of the downstream water. Beneficial uses for waters downstream of the WRP discharge locations are included in Table 11-6.

Water Quality Objectives

The California Water Code, Division 7, Chapter 4, Section 13241, specifies that each RWQCB will establish water quality objectives that, in the RWQCB's judgment, are necessary for the reasonable protection of beneficial uses and the prevention of nuisances. The LARWQCB enforces water quality objectives for inland surface waters, wetlands, and groundwater as part of the Basin Plan. The statewide objectives for ocean waters under the California Ocean Plan apply to all ocean waters in the region. The California Ocean Plan is discussed in Chapter 13.

The regional inland surface water quality objectives contained in the Basin Plan include ammonia; bacteria, coliform; bioaccumulation; biochemical oxygen demand; biostimulatory substances; chemical constituents; chlorine, total residual; color; exotic vegetation; floating material; methylene blue activated substances; mineral quality; nitrogen (nitrate, nitrite); oil and grease; oxygen, dissolved; pesticides; pH; polychlorinated biphenyls (PCBs); radioactive substances; solid, suspended, or settleable materials; taste and odor; temperature; toxicity; and turbidity.

Wetlands are under the regional objectives for surface water quality but also have regional narrative objectives. These narratives include objectives for hydrology and habitat.

The regional objectives for groundwater contained in the Basin Plan include bacteria; chemical constituents and radioactivity; mineral quality; nitrogen (nitrate, nitrite); and taste and odor. Chapter 3 of the Basin Plan provides a list of water quality objectives for the region (LARWQCB 1994).

11.3.3.2 Regional Water Quality Control Policy – Enclosed Bays and Estuaries of California

The SWRCB adopted a water quality control policy that provides principles and guidelines to prevent degradation and to protect the beneficial uses of waters of enclosed bays and estuaries. The Los Angeles Harbor, including the lower San Gabriel River Tidal Prism, is considered to be an enclosed bay under this

policy. The policy addresses activities such as the discharge of effluent, thermal wastes, radiological waste, dredged materials, and other materials that adversely affect beneficial uses of the bay and estuarine waters. Among other requirements, WDRs developed by the RWQCB must be consistent with this policy.

11.3.3.3 Order Nos. 91-100 & R4-2009-0048

These orders, established by the LARWCB, are the permits that regulate the volume and type of recharge in the Montebello Forebay. The Water Replenishment District is responsible for obtaining all recharge water in the Montebello Forebay and regularly testing the groundwater. The LACDPW is responsible for operations of the spreading grounds once the Water Replenishment District secures the water. The Sanitation Districts produce and supply the recycled water. The permit specifies that the maximum quantity of recycled water spread in any 60-month period cannot exceed 35 percent. The Water Replenishment District plans on purchasing 50,000 AF in 2011 to maximize the amount under regulatory limits. (Water Replenishment District 2010.) Currently, the Sanitation Districts are contracted with the Water Replenishment District to provide recycled water from the SJCWRP and WNWRP for the purposes of recharging the spreading grounds. The POWRP also provides recycled water for groundwater recharge at the spreading grounds.

11.3.3.4 NPDES Stormwater (MS4) Permits

Los Angeles County MS4 Permit

The Los Angeles County Municipal Separate Storm Sewer Systems (MS4) Permit (NPDES Permit No. CAS004001, Order No. 01-182) specifies the WDRs for municipal stormwater and urban runoff discharges from MS4s within the county of Los Angeles. The NPDES permit incorporates a provision to implement and enforce approved load allocations (TMDLs) for municipal stormwater discharges and requires amending the Stormwater Quality Management Plan after pollutant loads have been allocated and approved. The NPDES permit requirements are part of a two-phased program to regulate water quality. Phase I stormwater regulations were directed at MS4s serving a population of 100,000 or more, including interconnected systems and stormwater discharges associated with industrial activities, including construction activities. (The Phase I Final Rule was published on November 16, 1990 [55 CFR 47990].) Therefore, these requirements are applicable to the Los Angeles County Flood Control District (LACFCD), the county of Los Angeles, and 84 incorporated cities within the LACFCD (except Long Beach). The NPDES permit requires new development and redevelopment projects to incorporate stormwater mitigation measures. Depending on the type of project, either a standard urban stormwater mitigation plan or a site-specific mitigation plan is required to reduce the quantity and improve the quality of rainfall runoff that leaves the site. Developers are encouraged to begin work on complying with these regulations by visiting the appropriate city or county watershed protection department during the design phase of their projects.

The Phase II stormwater regulations are directed at stormwater discharges not covered in Phase I, including small MS4s (serving a population of less than 100,000), small construction projects (1 to 5 acres), municipal facilities with delayed coverage under the Intermodal Surface Transportation Efficiency Act of 1991, and other discharges for which the EPA administrator or the state determines that the stormwater discharge contributes to a violation of a water quality standard, or is a significant contributor of pollutants to waters of the United States.

Long Beach MS4 Permit

The Long Beach MS4 Permit (NPDES Permit No. CAS004003, Order No. 99-060) specifies the WDRs for municipal stormwater and urban runoff discharges within the city of Long Beach. Although Long Beach is within Los Angeles County, in 1999 it received its own MS4 permit that allows it to discharge into receiving waters. Discharges from MS4s consist of surface runoff (nonstormwater and stormwater) from various land uses in the hydrologic drainage basins within the city. Pollutants commonly found in stormwater runoff include pathogens, heavy metals, pesticides, herbicides, and synthetic organic compounds (fuels, waste oils, solvents, lubricants, and grease). Discharges from the MS4 that cause or contribute to the violation of water quality standards or water quality objectives are prohibited. Discharges from the MS4 of stormwater, or non-stormwater, for which the city of Long Beach is responsible, cannot cause or contribute to a condition of nuisance.

11.3.3.5 Dewatering Activities

Small amounts of construction-related dewatering are covered under the General Construction Permit. However, in 2008, the LARWQCB adopted Waste Discharge Requirements for Discharges of Groundwater From Construction and Project Dewatering to Surface Waters (Order No. R-4-2008-0032, NPDES Permit No. CAG 9944004), which covers larger amounts of dewatering. The permit covers "treated or untreated groundwater generated from permanent or temporary dewatering operations or other appropriate wastewater discharges not specifically covered in other general NPDES permits" (LARWQCB 2008). This includes treated or untreated wastewater from permanent or temporary construction dewatering operations. To comply with the permit, the applicant must submit an NOI. If found eligible, the executive officer will notify the discharger that the discharge is authorized under the terms and conditions of this order and prescribe an appropriate monitoring and reporting system. The permit includes discharge prohibitions, effluent limitations and discharge specifications, receiving water limitations, provisions, and compliance determinations. If the groundwater is found to be contaminated exclusively with petroleum products or volatile organic compounds, the activity would be subject to Dewatering Permit No. R-4-2007-0021. To obtain the necessary permit, a reasonable potential analysis using a representative sample of groundwater or wastewater to be discharged will be compared to the water quality screening criteria to determine the most appropriate permit.

11.3.3.6 NPDES Discharge Permits

Each WRP facility has an individual NPDES permit issued by the LARWQCB. Each of these permits limits the amount of recycled water that can be legally discharged to the receiving body of water. These limits vary based on the dry- and wet-season flows in the receiving water and the level of water quality constituents present at the time of discharge. Discharge limitations are included to protect the public and the environment from pollution of the receiving water, to maintain and achieve water quality standards, and to provide guidance for water quality monitoring and reporting at each permitted discharge location on an average monthly, average weekly, maximum daily, and in some cases instantaneous, basis.

11.3.4 Local

11.3.4.1 The County of Los Angeles Municipal Code

Appendix J of the Los Angeles Municipal Code includes discussion of grading and erosion control measures during construction. Elements of this appendix that relate to the Clearwater Program include:

J101.7 Stormwater Control Measures. The permittee and the owner of the property on which the grading is performed shall put into effect and maintain all precautionary measures necessary to protect adjacent water courses and public or private property from damage by erosion, flooding, and deposition of mud, debris, and construction-related pollutants originating from the site during grading and related construction activities. (Ordinance 2010-0053 Section 95; Ordinance 2007-0108 Section 33 (part), 2007.)

J111.1 General. All grading plans and permits and the owner of any property on which such grading is performed shall comply with the provisions of this section for NPDES compliance. All best management practices shall be installed before grading begins. As grading progresses, all best management practices shall be updated as necessary to prevent erosion and to control construction related pollutants from discharging from the site. All best management practices shall be maintained in good working order to the satisfaction of the Building Official until final grading approval has been granted by the Building Official and all permanent drainage and erosion control systems, if required, are in place. (Ordinance 2007-0108 Section 33 (part), 2007.)

J111.2 Stormwater Pollution Prevention Plan (SWPPP). The Building Official may require a SWPPP. The SWPPP shall contain details of best management practices, including desilting basins or other temporary drainage or control measures, or both, as may be necessary to control construction-related pollutants which originate from the site as a result of construction related activities. When the Building Official requires a SWPPP, no grading permit shall be issued until the SWPPP has been submitted to and approved by the Building Official. (Ordinance 2007-0108 Section 33 (part), 2007.)

J111.3 Wet Weather Erosion Control Plans (WWECP). When a grading permit is issued and the Building Official determines that the grading will not be completed prior to November 1, the owner of the site on which the grading is being performed shall, on or before October 1, file or cause to be filed with the Building Official a WWECP. The WWECP shall include specific best management practices to minimize the transport of sediment and protect public and private property from the effects of erosion, flooding or the deposition of mud, debris or construction related pollutants. The best management practices shown on the WWECP shall be installed on or before October 15. The plans shall be revised annually or as required by the Building Official to reflect the current site conditions. The WWECP shall be accompanied by an application for plan checking services and plan-checking fees equal in amount to 10 percent of the original grading permit fee. (Ordinance 2007-0108 Section 33 (part), 2007.)

11.3.4.2 The City of Long Beach Municipal Code

The City of Long Beach Municipal Code includes a discussion of construction development requirements as they relate to NPDES and standard urban stormwater mitigation plan regulations under Chapter 18.95, Section 18.95.050. The following apply to stormwater regulations within the program area.

18.95.050 – Development Construction

A. …Prior to the issuance of any building or grading permit for any project, the construction plans shall include features meeting the construction activities BMPs (CA-10 through CA-12, CA-20, CA-21 and CA-23, and CA-30 through CA-32) and the applicable provisions of the erosion and sediment control BMPs (ESC-1 through ESC-56) published in the "California

Storm Water Best Management Practice Handbooks (Construction Activity) (1993)," and BMP (CD-4[2]) of the "Caltrans Storm Water Quality Handbooks, Construction Contractor's Guide and Specifications (1997)", to ensure that every construction site meets the requirement of these regulations during the time of construction.

B. …Project plans shall include a narrative discussion of the rationale used for selecting or rejecting BMPs. The project architect or engineer of record, or authorized qualified designee, shall sign a statement on the plans [that identifies the effectiveness of the BMPs].

C. …Developments located adjacent to or directly discharging into environmentally sensitive areas, in a hillside area, or those that will result in the disturbance of [1] acre or more in size, shall have their construction plans include features meeting the applicable construction activities BMPs (CA-1 through CA-40) and erosion and sediment control BMPs (ESC-1 through ESC-56) published in the "California Storm Water Best Management Practice Handbooks (Construction Activity) (1993)" to ensure that every construction site meets the requirement of these regulations during the time of construction. Furthermore, these projects shall be required to prepare and submit to the city [of Long Beach] a SWPPP. The SWPPP shall include appropriate construction site BMPs listed in subsection [18.95.050 of the City of Long Beach Municipal Code].

D. …Projects with disturbed areas of [5] acres or greater shall prepare and submit to both the RWQCB and the city a SWPPP. The SWPPP shall include appropriate construction site BMPs listed in subsection 18.95.050.C [of the City of Long Beach Municipal Code]. In addition, an NOI to comply with the state construction activity storm water permit shall be filed with the RWQCB, and evidence of such filing shall be submitted to the city [of Long Beach].

11.3.4.3 The City of Pomona Municipal Code

The City of Pomona Municipal Code includes a discussion of discharge regulations and requirements in relation to stormwater management. This discussion can be found within Article X of Chapter 18 of the code, and an excerpt (3 through 5 of Section 18-495) is included as it relates to the Clearwater Program.

Section 18-495. Reduction of Pollutants in Stormwater

Any person engaged in activities that will or may result in pollutants entering the city storm sewer system shall undertake all practicable measures to reduce such pollutants. Examples of such activities include ownership and use of facilities which may be a source of pollutants such as parking lots, gasoline stations, industrial facilities, commercial facilities, stores fronting city streets, etc. The following minimal requirements shall apply:

(3) *Best management practices for new developments and redevelopments.* Any construction contractor performing work in the city shall endeavor, whenever possible, to provide filter materials at the catchbasin to retain any debris and dirt from flowing into the city's storm sewer system. The city engineer may establish controls on the volume and rate of stormwater runoff from new developments and redevelopments as may be appropriate to minimize the discharge and transport of pollutants. Any person or company engaging in a construction activity that requires a NPDES construction permit must demonstrate possession of such permit before grading and/or building permits may be issued. A copy of the NPDES permit shall be retained on site and shall be shown to authorized enforcement officials upon request.

(4) *Notification of intent and compliance with general permits.* Each … discharger … shall provide notice of intent, comply with, and undertake all other activities required by any general stormwater permit applicable to such discharges. All persons or companies engaging in industrial activity that requires an individual NPDES permit shall acquire such permit before discharging any nonstormwater runoff into the city storm sewer system. A copy of the NPDES permit shall be retained on site and shall be shown to authorized enforcement officials upon request. Each discharges identified in an individual NPDES permit relating to stormwater discharges shall comply with and undertake all activities required by such permit.

(5) *Compliance with best management practices.* Where best management practices guidelines or requirements have been adopted by any federal, state, regional, and/or city agency for any activity, operation, or facility that may cause or contribute to stormwater pollution or contamination, illicit discharges, and/or discharge of nonstormwater to the stormwater system, every person undertaking such activity or operation or owning or operating such facility shall comply with such guidelines or requirements as may be identified by the city engineer.

11.3.4.4 The City of Cerritos Municipal Code

The City of Cerritos Municipal Code includes a discussion of stormwater and urban runoff prevention controls under Chapter 6.32 in relation to stormwater management. Excerpts (A and C of Section 6.32.050) of the code (Ordinance 777 Section 1 (part), 1997) as it applies to the Clearwater Program are included.

6.32.050 – Construction Site Requiring Building Permit and/or Grading Plan

(A) Any person or business engaging in construction activity that required an NPDES construction permit must obtain that permit from the RWQCB, and must demonstrate possession of such permit before grading and/or building permits can be issued. The NPDES construction permit shall be retained on site and shall be shown to the authorized enforcement officer upon request.

(C) The following BMPs shall apply to all projects under construction in the city at the time of demolition of an existing structure or commencement of new construction, and shall remain in place until receipt of a certificate of occupancy.

1. Runoff, sediment, and construction debris shall not leave the site and enter the stormdrain system.
2. Any sediments or other materials that are tracked off site shall be removed the same day as they are tracked off site. Where determined necessary by the authorized enforcement officer, a temporary sediment barrier shall be installed.
3. Drainage controls to prevent runoff from leaving the site shall be utilized as needed, depending on the topography of the site and extent of proposed grading. These controls may include but are not limited to the following:
    a. detention ponds, sediment ponds or infiltration pits
    b. dikes, filter berms or ditches
    c. down drains, chutes or flumes

4. Plastic covering may be utilized to prevent erosion of an otherwise unprotected area, along with runoff devices to intercept and safely convey the runoff.
5. Excavated soil shall be located on the site in a manner that eliminates the possibility of sediment running off site. Soil piles shall be covered until the soil is either used or removed.
6. No runoff from washing construction or other industrial vehicles on site shall be permitted to leave the site or enter the storm drain system.
7. The city may, as a condition of granting a construction permit, set reasonable limits on the clearing of vegetation from construction sites, including but not limited to regulating the length of time during which soil may be bare and, in certain sensitive cases, prohibit bare soil.

11.3.4.5 The City of Carson Municipal Code

Article V of Chapter 8 of the City of Carson Municipal Code includes ordinances dedicated to stormwater and urban runoff pollution control. The ordinance within this chapter (Ordinance 96-1101, Section 1) that relates to the Clearwater Program is as follows:

5808 – Requirements for Industrial/Commercial and Construction Activities

Each industrial discharger, discharger associated with construction activity, or other discharger described in any general storm water permit addressing such discharges, as may be issued by the U.S. EPA, the SWRCB, or the RWQCB shall comply with all requirements of such permit. Each discharger identified in an individual NPDES permit shall comply with and undertake all activities required by such permit. Proof of compliance with any such permit may be required in a form acceptable to the City Manager or designated representative, prior to the issuance of any grading, building or occupancy permits, or any other type of permit or license issued by the [city of Carson].

11.3.4.6 The City of Los Angeles Municipal Code

Chapter IX of the City of Los Angeles Municipal Code includes ordinances that relate to the reduction of stormwater runoff during construction. The following ordinances of the municipal code that relate to the Clearwater Program are included.

Ordinance No. 172,673 – Effective7/30/99. (Chapter IX, Article 1, Section 91.106.4.1, Exception 14.) The Department of Building and Safety shall require applicants, as a condition for issuing a grading or building permit, to incorporate into the plan documents best management practices necessary to control stormwater pollution from sediments, erosion, and construction materials leaving the construction site. Such requirements shall be in accordance with the provisions contained in the "Development Best Management Practices Handbook, Part A Construction Activities" adopted by the Board of Public Works as authorized by Section 64.72 of the Los Angeles Municipal Code.

Ordinance No. 179,324 – Effective 12/10/07. (Chapter IX, Article 1, Section 91.106.4.1, Exception 15.) The Department of Building and Safety shall have the authority to withhold grading and/or building permits for developments until:

A. The applicant incorporates into the development to the satisfaction of the Bureau of Sanitation of the Department of Public Works, best management practices necessary to control stormwater pollution in accordance with the Development Best Management

Practices Handbook, Part B Planning Activities adopted by the Board of Public Works as authorized by LAMC Section 64.72; and

B. The Bureau of Sanitation of the Department of Public Works receives a Covenant and Agreement, signed by the owner and recorded with the Los Angeles County Recorder, declaring that the best management practices necessary to control stormwater pollution shall be installed and/or constructed and maintained in proper working condition at all times; and

C. The applicant submits to the Bureau of Sanitation of the Department of Public Works, a set of plans and specifications showing compliance with the Standard Urban Stormwater Mitigation Plan or Site Specific Mitigation Plan.

11.4 Environmental Impacts and Mitigation Measures

Data and information used in the environmental impact analysis were obtained from several sources including:

- Sanitation Districts Water Monitoring Department
- NPDES permits for each WRP and the JWPCP
- LACDPW
- SWRCB
- LARWQCB

11.4.1 Methodology and Assumptions

11.4.1.1 Program Methodology

All program elements, except effluent management, were analyzed by comparing baseline conditions to conditions during construction and/or operation of the program element, and quantifying the change. The program would comply with all local regulations cited in Section 11.3.4, and existing regulations managing erosion, sedimentation, and runoff that could be caused by construction are incorporated where appropriate into the analysis of the program elements.

Effluent Management

The effluent volumes discharged from each WRP would change under all alternatives, including the No-Project Alternative (Alternative 5), of the Clearwater Program. This change would result from changing operations within the Sanitation Districts' facilities and factors outside the Sanitation Districts' control, such as a decrease in wastewater flows that might occur due to water conservation, or a decrease in recycled water discharge to receiving bodies that might occur as a result of increased reuse demand. The 2050 WRP wastewater flow projections are based on population and a per capita wastewater generation rate in the JOS. It is projected that by 2050, all of the WRPs would be at their full capacity, and the SJCWRP would be expanded by 25 million gallons per day (MGD). Projections for reuse of recycled water from the WRPs are based on evaluated reports, reviewed master plans, and personal communications with reuse project proponents in the JOS. Based on this research, and the likelihood of implementing the future reuse projects currently being proposed, low-end and high-end reuse projections were developed.

Discharge to the unlined channels of San Jose Creek and the San Gabriel River from the SJCWRP is represented by the amount of water that is necessarily diverted to avoid surcharging the plant's outfall during peak flow periods, and makes up a portion of the plant effluent contracted to the Water Replenishment District as discussed in Section 11.3.3.3. This discharge may not be delivered to the Water Replenishment District uniformly throughout the year. It is anticipated that future deliveries to the Water Replenishment District may be similar to current deliveries and may range from 10 to 50 MGD due to the continued and increased reliance on groundwater recharge and recycled water to increase the Southern California water supply. Recycled water discharged to unlined channels of San Jose Creek, the Zone Ditch 1, the Rio Hondo, and the San Gabriel River (i.e., reused through groundwater replenishment) from the POWRP and WNWRP represents the difference between the anticipated treated flow (i.e., plant capacity in 2050) and that being sent to other reuse applications.

The Sanitation Districts' Clearwater Program is consistent with the SWRCB Recycled Water Policy to provide recycled water to water purveyors in the region. The Recycled Water Policy mandates an increase in the use of recycled water in California of 200,000 AFY by 2020 and of an additional 300,000 AFY by 2030. This would be achieved through the cooperation and collaboration of the SWRCB, RWQCBs, environmental community, water purveyors, and operators of publicly owned treatment works.

The annual average daily discharge for 2008 (baseline) and the projected range of discharges to receiving waters in 2050 (planning horizon) are summarized in Table 11-18. For effluent reuse not discharged to receiving waters, the annual average reuse for 2008 (baseline) and the projected range of reuse for 2050 (planning horizon) is provided in Table 11-19. It should be noted that, in general, the quantities of recycled water delivered do not equal the quantities treated, spread, discharged, or directly reused due to metering differences between the Sanitation Districts and the various water purveyors.

Table 11-18. Annual Average Daily Discharge to Receiving Waters for 2008 (Baseline) and Projected Range of Discharges to Receiving Waters for 2050 (Planning Horizon)

		Daily Discharge to Receiving Waters (MGD)	
WRP	**Use (Discharge Point)**	**Annual Average (2008[a])**	**Projected Range (2050)**
SJCWRP	Groundwater recharge (spreading grounds and discharge into unlined channels) (SJC002, SJC003, and SJC001A)	24	24
POWRP	Groundwater recharge (discharge into unlined channel) (PO001)	4	5–6
WNWRP	Groundwater recharge (spreading grounds and discharged into unlined channels) (WN001, WN002, WN004)	5	9
SJCWRP	Other discharge (SJC001)	41	0–49
LCWRP	Discharge (LC001)	25	12–31
LBWRP	Discharge (LB001)	12	9–14

[a] Source: Sanitation Districts 2009a; 2009b; 2009c; 2009d; 2009e

Table 11-19. Annual Average Reuse for 2008 (Baseline) and Projected Range of Reuse for 2050 (Planning Horizon) That Is Not Discharged to Receiving Waters

		Effluent Reuse (MGD)	
WRP	**Use**	**Annual Average (2008[a])**	**Projected Range (2050)**
SJCWRP	Reuse	7[b]	52–101
POWRP	Reuse	4	9–11
LCWRP	Reuse	3[b]	6–25
LBWRP	Reuse	6	11–16
WNWRP	Reuse	1	5

[a] Source: Sanitation Districts 2009a; 2009b; 2009c; 2009d; 2009e

[b] The Central Basin Municipal Water District recycled water distribution system receives a combination of recycled water from both the SJCWRP and LCWRP, which was accounted for under the LCWRP in the 2008 Annual Monitoring Report. However, this table accounts for the recycled water under the SJCWRP because most of the recycled water delivered through the system actually originated from the SJCWRP.

A detailed characterization of streamflow and WRP discharge data is presented in the analysis under Impact BIO-1 in Chapter 6. That analysis finds that for most of the year, except during periods after heavy rainfall or upstream dam releases, WRP discharges are the primary flow source in the stream channels receiving such discharges. Discharges from the POWRP, WNWRP, and SJCWRP discharge points located upstream of the San Gabriel Coastal Spreading Grounds primarily infiltrate to groundwater at the Rio Hondo and San Gabriel Coastal Spreading Grounds, and in unlined channels located upstream of these spreading grounds. Discharges from the lowermost SJCWRP discharge point (SJC001) and from the LCWRP and LBWRP are made to fully lined channels and are conveyed downstream to the Pacific Ocean at San Pedro Bay, likely with minimal infiltration. Because of the location of the discharge points, water quality is controlled by WRP discharge composition during the dry season, and is not responsive to WRP discharge composition in the aftermath of storm events or during major dam releases. During the dry season, WRP discharges comprise the majority of instream flows, so the instream water quality parameters are typically similar to the NPDES-permitted composition of the WRP discharge. After rainfall events or during major dam releases, instream flows greatly exceed WRP discharges and the discharges have proportionally little potential to affect instream water quality parameters. Intermediate conditions where instream flows derived from other sources contribute a significant portion of flow, and thus have the potential to materially affect instream water quality parameters, are quite rare, occurring for only a few days each year. No water quality data characterizing such conditions were located. However, it is likely that during such times, ambient flows are typically water quality limited with regard to turbidity, while WRP discharges are water quality limited to the extent allowed under their NPDES permit. The rationale for this is explained in the following paragraph.

Most flows in excess of WRP discharge volumes are related to storm events. Due to the high percent of impervious surface coverage in much of the watershed, coupled with a large fraction of watershed channels that are fully lined with concrete, incidental precipitation that does not infiltrate runs off quickly, resulting in rapid rises in discharge followed by a relatively rapid decline (i.e., over a period of a few days) to normal flows. During the rainfall event and peak flow discharge, large volumes of accumulated pollutants are washed into channels. These include oils, greases, and metal particulates accumulated on roadways; landscaping chemicals and pet wastes accumulated in residential areas; fine particulate and aerosol materials deposited from the atmosphere since the previous rainfall event; and other, lesser pollutant sources. These pollutants are predominately carried off during the peak flow event, and especially during the initial hours of the event. Conversely, after flows decline to the point where instream flow is dominated by WRP discharge, there is little mechanism for delivery of such pollutants to surface waters. Human activities such as landscape irrigation produce some runoff, but there are limited

overland flows to deliver roadway pollutants or atmospherically deposited pollutants to surface waters. Thus, during dry season flows, there is less potential to deliver pollutants to surface waters except via NPDES-permitted discharges.

Implementation of the NPDES Phase II permit described in Section 11.3.3.4 is expected to reduce pollutant loading from wet-weather and dry-weather urban runoff. This is expected to have a beneficial effect on water quality in the receiving waters. Furthermore, per the incentives outlined in the SWRCB Recycled Water Policy described in Section 11.3.2.2, TMDLs will be assigned in a manner that provides an incentive for greater water recycling.

Non-point source pollution from urban runoff, which degrades water quality, cannot be controlled by the Sanitation Districts. Activities generating urban runoff (e.g., impervious surfaces collecting pollutants, pesticide and herbicide application to landscaped areas that are irrigated, etc.) are regulated by a number of agencies with jurisdictions to do so including the EPA, SWRCB, LARWQCB, Los Angeles County, city of Long Beach, and all cities in the watersheds. Furthermore, the stormwater infrastructure, which conveys the polluted urban runoff to the receiving waters, is managed by the California Department of Transportation (Caltrans), the LACDPW, local flood control districts, and local cities (see Section 20.2.1.2 for a discussion of the stormwater infrastructure). The Sanitation Districts are not able to propose or solely implement program elements in this area, which is outside their jurisdiction.

Proposed operational changes at the WRPs would result in a net reduction in effluent volumes delivered to the lower San Gabriel River (Reach 1, Figure 11-3) and the San Gabriel River Estuary. These changes would alter the volume of fresh water flows and the pollutant loadings being delivered to the estuary. Effects are potentially significant and are analyzed in this chapter.

11.4.1.2 Project Methodology and Assumptions

All project elements were analyzed by comparing baseline conditions to conditions during construction and/or operation of the proposed project element and quantifying the change between conditions. The project would comply with all local regulations cited in Section 11.3.4, and existing regulations managing erosion, sedimentation, and runoff that could be caused by construction are incorporated where appropriate into the analysis of project elements. Assumptions were made regarding the type of construction that would take place at each shaft site and incorporated into the analysis. The appropriate construction method for each shaft would be chosen prior to construction based on site-specific soils and geologic characteristics from the following list, which describes the various shaft construction methods.

1. Slurry diaphragm walls are often used for watertight excavation. This circular wall is constructed in segments. A void is excavated around the perimeter of the shaft footprint and is filled with a bentonite slurry to maintain stability of the excavation. Once the excavation is complete, a metal cage is lowered into the slurry and concrete is placed by tremie techniques from the bottom up. This process is continued until all the panels are complete, resulting in an impervious reinforced wall limiting groundwater inflow.
2. Ground freezing involves inserting a matrix of tubes into the ground around the shaft to be excavated and pumping refrigerant into the tubes creating a perimeter frozen zone. Material from the middle of the frozen zone is then excavated. When the construction work is completed, the refrigerant is turned off and the frozen ground returns to preconstruction conditions.
3. Sequential excavation is used for deep shafts in suitable ground conditions above the water table. These shafts are supported using steel ring beams with liner plates, shotcrete, or timber lagging.

The shaft would be excavated 5 to 10 feet at a time and then a ring would be put in place. This is method is also known as top-down excavation.

The following assumptions were made regarding impacts associated with dewatering during construction.

1. Based on the anticipated construction method of using a tunnel boring machine (TBM), the tunnel would be watertight. Equal pressure between the cutting face and the soil would be maintained. There would be minimal leakage of groundwater into the excavation because the soil interface is isolated within the pressurized cutting face. Therefore, only minimal volumes of nuisance water would need to be removed from the tunnel during construction. Water generated during tunnel construction would not be released directly into receiving waters. Any inflow of water and/or slurry used during tunneling activities would be pumped back to a working shaft site. All collected water (including nuisance and slurry decant) would be discharged to the sewer for treatment at the JWPCP or the Terminal Island Water Reclamation Plant.
2. Although the shaft walls and bottom would be sealed to prevent water intrusion, dewatering could be necessary at the shaft sites during construction. For California Environmental Quality Act (CEQA) analysis purposes, it is conservatively assumed that nuisance water would be contaminated (e.g., due to alkalinity from contact with uncured concrete).
3. Groundwater dewatered at the shaft site would not be directly discharged to the stormwater system or receiving water, but sent to a treatment plant through the sewer system. Sewer disposal would depend on the location of the shaft site. Available treatment facilities include the JWPCP and the Terminal Island Water Reclamation Plant.
4. Dewatering at the shaft sites would occur at rates and times that would not exceed either the JWPCP or the Terminal Island Water Reclamation Plant capacity.

11.4.1.3 Baseline

CEQA Baseline

The CEQA baseline for the Clearwater Program is described in Section 1.7.4.1. CEQA Guidelines require that an environmental impact report (EIR) include a description of the physical environmental conditions in the vicinity of a proposed project that exist at the time the notice of preparation is published, which is presented in Section 2.2.4. Thus, calendar year 2008 is the CEQA baseline for all project elements. For the Clearwater Program and to plan for facility needs, the Sanitation Districts used multiple data years. These data were comparable to discharge amounts for calendar year 2008. A limited review of prior years' data indicate that 2008 is a representative or slightly drier than average year. Therefore, for purposes of analyzing flow in surface waters, diversions, and discharges, the 2008 operational calendar year data were used. Furthermore, this year was considered by Sanitation Districts staff to be a typical year for WRP operational discharges and receiving water flows for the program-level analysis. Accordingly, the year 2008 constitutes the baseline for CEQA analysis.

NEPA No-Federal-Action Baseline

The National Environmental Policy Act (NEPA) baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline is not bound to a "no growth" scenario. Therefore, the NEPA baseline may include increases in operations over the life of a project that do not require federal action or approval.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the U. S. Army Corps of Engineers' (Corps')

geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

11.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for hydrology, water quality (fresh water), and public health (HYD):

HYD-1. Creates pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or causes regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody.

HYD-2. Adversely changes the level, rate, or direction of flow of groundwater.

HYD-3. Results in an increased level of groundwater contamination or affects the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion).

HYD-4. Causes regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act.

HYD-5. Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site.

HYD-6. Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increases the rate or amount of surface runoff in a manner that would result in flooding on site or off site.

HYD-7. Creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provides substantial additional sources of polluted runoff.

HYD-8. Results in demonstrable and sustained reduction of groundwater recharge capacity.

HYD-9. Places housing or other structures within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary, Flood Insurance Rate Map, or other flood hazard delineation map, which would impede or redirect flood flows.

HYD-10. Exposes people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

HYD-11. Is subject to inundation by seiche, tsunami, or mudflow.

HYD-12. Substantially increases workers' or the public's actual or potential exposure to wastes or pathogens.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on hydrology, water quality (fresh water), and public health before mitigation. Table 11-20 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 11-20 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 11-20. Thresholds Evaluated

		Threshold											
	Alt.	**HYD-1**	**HYD-2**	**HYD-3**	**HYD-4**	**HYD-5**	**HYD-6**	**HYD-7**	**HYD-8**	**HYD-9**	**HYD-10**	**HYD-11**	**HYD-12**
Program Element													
Conveyance System Improvements	1–5	X		X		X		X					
SJCWRP Plant Expansion	1–5	X		X		X		X					
SJCWRP Process Optimization	1–4	X		X		X		X					
SJCWRP Effluent Management	1–5	X		X	X	X							
POWRP Process Optimization	1–4	X		X		X		X				X	
POWRP Effluent Management	1–5	X		X	X	X							
LCWRP Process Optimization	1–4	X		X		X		X					
LCWRP Effluent Management	1-5	X		X	X								
LBWRP Process Optimization	1–4	X		X		X		X					
LBWRP Effluent Management	1–5	X		X	X								
WNWRP Effluent Management	1–5	X		X	X	X							
JWPCP Solids Processing	1–5	X		X		X		X					
Project Element													
Wilmington to SP Shelf (onshore tunnel)[a]	1,2			X	X								
Wilmington to PV Shelf (onshore tunnel)[a]	1,2			X	X								
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3			X	X								
Figueroa/Western to Royal Palms (onshore tunnel)	4			X	X								
JWPCP East Shaft Site	1,2	X	X	X	X	X		X					
TraPac Shaft Site	1,2	X	X	X		X		X				X	
LAXT Shaft Site	1,2	X	X	X		X		X				X	
Southwest Marine Shaft Site	1,2	X	X	X		X		X				X	
JWPCP West Shaft Site	3,4	X	X	X	X	X		X					
Angels Gate Shaft Site	3	X	X	X		X		X					
Royal Palms Shaft Site	4	X	X	X		X		X				X	
SP Shelf Riser/Diffuser Area	1											X	

Table 11-20 (Continued)

	Alt.	Threshold											
		HYD-1	HYD-2	HYD-3	HYD-4	HYD-5	HYD-6	HYD-7	HYD-8	HYD-9	HYD-10	HYD-11	HYD-12
PV Shelf Riser/Diffuser Area	2,3											X	
Existing Ocean Outfalls Riser/Diffuser Area	1–4											X	
Emergency Discharge	5,6	X				X		X					

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
Alt. = alternative

For a detailed discussion of impacts associated with marine hydrology and water quality resulting from the construction of the offshore tunnel, construction and operation of the riser/diffuser, and rehabilitation and maintenance of the existing ocean outfalls, refer to Chapter 13.

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears. Additionally, in subsequent alternatives where no new elements are introduced under a specific threshold, that threshold is not repeated.

11.4.3 Alternative 1

11.4.3.1 Program

Impact HYD-1. Would Alternative 1 (Program) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody?

Conveyance System – Conveyance Improvements

Construction

The Clearwater Program has identified the need for future conveyance improvements. The existing conveyance system is predominantly located within public rights-of-way at depths between 5 and 25 feet bgs; therefore, construction would typically take place at these depths. Because the precise location of the planned conveyance improvements and the appropriate construction techniques are not known at this time, the specific location of potential effects cannot be determined.

Implementation of the conveyance improvements could result in impacts on hydrology, water quality (fresh water), and public health. At this time, no specific projects have been proposed. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as appropriate on conveyance system construction projects for both the installation of new sewers and the rehabilitation of existing sewers. Contractors would be required to comply with all applicable permits and regulations as noted.

- City, LACDPW, and Caltrans regulations as required, including implementation of appropriate BMPs that may include a WWECP
- NPDES General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002) for projects where 1 acre or more of soil will be disturbed; preparation of a site-specific SWPPP is required
- WDRs for Discharges of Groundwater From Construction and Project Dewatering to Surface Waters (General NPDES Permit No. CAG994004); preparation of a site-specific dewatering plan is required
- If necessary, individual permits in place of the general permits referenced herein if the project does not qualify for a general permit

In consideration of project compliance with these permit requirements, coupled with project location in areas of predominately low environmental sensitivity (public rights-of-way), impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Construction would take place within the existing SJCWRP boundary on vegetated surfaces (lawns). Construction and excavation causes soil to be exposed, potentially leading to erosion and sedimentation. Soils at the SJCWRP are described in Table 11-14. Soils at the SJCWRP have low erosion potential. However, due to the removal of the soil and potential stock piling, erosion and sedimentation are of concern as they could convey sediment into the San Gabriel River, potentially causing regulatory violations as defined by the beneficial use standards and TMDLs outlined in the existing Basin Plan (discussed in Sections 11.2.1 and 11.3.3.1). Additional pollutants associated with construction activities and their typical sources are identified in Table 11-21.

Table 11-21. Construction Pollutants

	Pollutant						
Construction Activity	**Sediment**	**Nutrients**	**Trace Metals**	**Pesticides**	**Oil, Grease, Fuels**	**Other Toxic Chemicals**	**Miscellaneous Waste**
Construction Practices							
Dewatering Operations	X					X	
Paving Operations	X			X	X	X	X
Structure Construction/Painting			X			X	X
Landscaping	X	X		X	X		
Material Management							
Material Delivery and Storage	X	X	X	X	X	X	
Material Use		X	X	X	X	X	
Waste Management							
Solid Waste	X	X					X
Hazardous Waste						X	
Contaminated Spills						X	
Concrete Waste							X
Sanitary/Septic Waste							X

Table 11-21 (Continued)

	Pollutant						
Construction Activity	**Sediment**	**Nutrients**	**Trace Metals**	**Pesticides**	**Oil, Grease, Fuels**	**Other Toxic Chemicals**	**Miscellaneous Waste**
Vehicle/Equipment Management							
Vehicle/Equipment Fueling						X	X
Vehicle/Equipment Maintenance						X	X

Source: California Stormwater Quality Association 2003

The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize erosion, sedimentation, or other such impacts. The contractor for the construction of plant expansion at the SJCWRP would be required to comply with all local and other regulations as noted.

- LACDPW regulations as required, including implementation of appropriate BMPs that may include a WWECP
- NPDES General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002) for projects where more than 1 acre will be disturbed; preparation of a site-specific SWPPP is required
- WDRs for Discharges of Groundwater From Construction and Project Dewatering to Surface Waters (General NPDES Permit No. CAG994004); preparation of a site-specific dewatering plan is required
- If necessary, individual permits in place of the general permits referenced herein if the project does not qualify for a general permit

Because the Sanitation Districts would require the contractor to comply with all the applicable stormwater and water quality regulations and permits, and in consideration of the low environmental sensitivity of the proposed work site (lawns), impacts would be less than significant.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

Process optimization at the WRPs would include constructing underground tanks (approximately 15 to 35 million gallons). At the SJCWRP, the storage tanks may be located under a parking lot, with a portion of one of the tanks sited beneath an existing vegetated area. At the POWRP, the tanks would be located below an existing graded, unpaved area. At both the LCWRP and LBWRP, the tanks would be located below an existing vegetated area. Extensive excavation would occur to construct the underground storage facilities and would require soil stockpiling. While soils on site have been identified as having low or low-moderate erosion potential (Table 11-14), the amount and length of excavation could lead to sedimentation off site. Furthermore, construction contaminants could also be transported off site by the action of water or wind, affecting water quality of receiving waters. However, the General Construction Permit requires stock pile management for inactive stock piles (defined as those that are not scheduled to be used within 14 days).

The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize erosion, sedimentation, or other such impacts. Contractors for construction of process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP would be required to comply with all local and other regulations as noted.

- City of Pomona, city of Cerritos, city of Long Beach, and LACDPW regulations as required, including implementation of appropriate BMPs that may include a WWECP
- NPDES General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002) for projects where 1 acre or more of soil will be disturbed; preparation of a site-specific SWPPP is required
- WDRs for Discharges of Groundwater From Construction and Project Dewatering to Surface Waters (General NPDES Permit No. CAG994004); preparation of a site-specific dewatering plan is required
- If necessary, individual permits in place of the general permits referenced herein if the project does not qualify for a general permit

Because the Sanitation Districts would require the contractor to comply with all applicable stormwater and water quality regulations and permits, and in consideration of the low environmental sensitivity of the proposed work areas (built areas and areas without sensitive natural communities), impacts would be less than significant.

San Jose Creek Water Reclamation Plant – WRP Effluent Management

Operation

Operation of the SJCWRP under the program could include a change to effluent management at the WRP. This change could result in a violation of regulatory standards either through a discharge of effluent that does not meet NPDES standards and loads pollutants into the receiving waters, or through a reduction in the effluent discharged that reduces the quantity of water in the receiving water and impairs beneficial use designations.

Treated effluent from the SJCWRP is discharged in accordance with a current NPDES permit (permit CA0053911). The SJCWRP is consistently compliant with the terms of this permit. Although violations of effluent standards occurred due to heavy rainfall in December 2010, the last violations before that occurred in June 2007. Furthermore, in the past, reported violations have generally been infrequent and swiftly corrected. Accordingly, it is assumed that discharges from the SJCWRP are compliant with the terms of the plant's NPDES permit, and thus, that the treated effluent discharged from the SJCWRP does not currently contribute to a degradation of water quality in the receiving waters in the form of pollutant loading. Wastewater at the SJCWRP would continue to be treated as in the past, and there would be no changes to the treatment process that would modify the quality of the effluent discharged. Therefore, the change in volume of treated effluent discharged from the SJCWRP into San Jose Creek and the San Gabriel River at the various discharge points would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code and would not cause the existing SJCWRP NPDES permit to be violated. Impacts would be less than significant.

The beneficial uses of the San Gabriel River and San Jose Creek are described in Table 11-12 and Section 11.2.2. The San Gabriel River and San Jose Creek are listed as being impaired for a number of constituents, which are summarized in Table 11-13. The SJCWRP would continue to discharge from SJC002, SJC003, and SJC001A into San Jose Creek and the San Gabriel River, and it is projected that the

annual average daily discharge from these discharge points would remain the same (Table 11-18). The range in monthly average discharges under the program would also likely be comparable to baseline conditions (Table 11-5). Accordingly, there is little potential for future operations to alter discharge volume or quality relative to current conditions, and impacts would be less than significant.

The SJCWRP would also continue to discharge from SJC001 into Reach 1 of the San Gabriel River. The annual average rate of discharge would vary between 0 and 49 MGD, which represents a potentially substantial change from the baseline discharge rate of 41 MGD (varying monthly from 33 to 56 MGD) (Table 11-5 and Table 11-18). The change in SJC001 discharge is forecast to occur due to increased allocations to the San Gabriel Coastal Spreading Grounds, located upstream of SJC001 on the San Gabriel River, and also anticipates additional allocation of treated effluent that water purveyors in the region would use to meet the state mandate regarding recycled water described in Section 11.3.2.2. However, as described in the following, increases in reuse would not result in significant impacts along Reach 1 of the San Gabriel River.

Beneficial uses in the affected portion of the San Gabriel River (Reach 1) include existing uses REC-1 and REC-2, potential uses WARM and WILD, and conditional potential use MUN (Table 11-12). Additional beneficial uses occur in the San Gabriel River Estuary, but SJCWRP discharges are currently considered to have a negligible potential to affect those uses per the rationale detailed in the following analysis for the San Gabriel River Tidal Prism and Estuary.

The designations REC-1 and REC-2 refer to water contact and non-contact recreation, respectively. The lined channel reach contains no facilities for water contact recreation, is fenced and signed against public entry, and, for most of the year, the water consists of discharged treated effluent. Therefore, the reach is currently not suitable for water contact recreation, and there is no potential to alter the reach suitability for water contact recreation under the program. Non-contact recreational uses identified in the area include use of the adjacent bike path and occasional bird-watching; there is no potential for the program to alter these uses. Other potential non-contact recreational uses include boating and fishing. These activities are prohibited in the affected reach, which is signed and fenced. Boating in this fully lined reach would be impracticable. Fishing has not been observed in the affected reach (Allen et al. 2008:23-24). The reach does support fish populations of Wami tilapia (*Oreochromis urolepis*) and Mozambique tilapia (*O. mossambicus*), non-native sport fishes (Nico 2006a). There is an active recreational fishery for these species in the San Gabriel River Estuary (Allen et al. 2008). The tilapia have a high salinity tolerance and inhabit both the estuary and the influent streams, including the San Gabriel River and Coyote Creek; they have been established in these streams since at least the early 1970s (Nico 2006a, 2006b). They are regarded by the California Department of Fish and Game (CDFG) as an invasive and undesirable species; however the Sanitation Districts manage flows in the San Gabriel River in a manner that prevents undesired strandings of these species. To achieve this goal, reductions in WRP discharges to the lined reaches of the San Gabriel River are performed gradually to avoid stranding tilapia above the waterline. Sanitation Districts' biologists monitor the process, and flows are managed to avoid stranding of the fish. The CDFG is also notified when such flow reductions are performed. Thus, under the baseline condition, WRP discharges are managed so as to avoid adverse impacts on the tilapia and the recreational fishery that utilizes them, and this management approach would continue unchanged under the program. Accordingly, impacts on REC-1 and REC-2 beneficial uses would be less than significant.

The potential use designation WILD refers to wildlife habitat. Because the affected channel is fully lined and unvegetated, it has little potential to provide habitat for terrestrial species. It may be occupied by aquatic species, chiefly including invertebrates and fishes, such as the tilapia. It may also be used by some foraging terrestrial wildlife species, such as rats (*Rattus norvegicus*), but that species is a pest and a public health hazard, and loss of habitat for it would not constitute a significant impact. Aquatic wildlife

in the reach consists of the tilapia populations described in the preceding paragraph and, as detailed, the current and proposed practice is to manage WRP discharges in a manner that avoids impacts on this resource. Thus, impacts on the WILD beneficial use would be less than significant.

The potential use designation WARM refers to warm fresh water habitat. Potential effects on warm-water habitat would be substantially the same as those discussed above for the WILD beneficial use and, per the same rationale, would be less than significant.

The conditional potential beneficial use MUN refers to municipal and domestic water supply. Currently, the river reach is primarily used as a discharge point for industrial users and municipal users. Furthermore, municipal and domestic water supplies are not currently pulled from the river reaches, but rather obtained from the various domestic water purveyors or from the WRPs directly via recycled water infrastructure. All of these recycled uses, in the future and under program conditions, would be better supported by direct service from a treated wastewater source such as the SJCWRP or a potable water purveyor rather than by pumping treated wastewater from a stream channel. Accordingly, impacts on these beneficial uses would be less than significant.

A discussion of proposed operational changes at the WRPs that discharge into the San Gabriel River (i.e., the SJCWRP, LCWRP, and LBWRP) that could affect the San Gabriel River Tidal Prism and Estuary is provided later in this impact analysis.

Pomona Water Reclamation Plant – WRP Effluent Management

Operation

Operation of the POWRP under the program would result in a change to effluent management at the WRP. This change could result in a violation of regulatory standards, as described for the SJCWRP.

Treated effluent from the POWRP is discharged in accordance with a current NPDES permit (permit CA0053619). The POWRP is consistently compliant with the terms of this permit; no violations of effluent standards have occurred since March 2008. Accordingly, it is assumed that discharges from the POWRP are compliant with the terms of the plant's NPDES permit and that the treated effluent discharged from the POWRP does not currently contribute to a degradation of water quality in the receiving waters in the form of pollutant loading. Wastewater at the POWRP would continue to be treated as in the past, and there would be no changes to the treatment process at the WRP that would modify the quality of the effluent discharged. Therefore, the small anticipated change in the volume of treated effluent would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code and would not cause the existing POWRP NPDES permit to be violated. Impacts would be less than significant.

The POWRP discharge point PO001 is the principal source of discharge to the South Fork of the San Jose Creek tributary (part of Reach 2) that receives the discharge. As discussed under Impact BIO-1 in Chapter 6, there are no flow data for the South Fork but routine observations by Sanitation Districts staff indicate that dry-weather flow in the absence of POWRP discharges is negligible (less than 1 MGD); it is a lined channel and, presumably, there is little flow loss during its course to the San Jose Creek main stem. The South Fork joins the much larger North Fork about 13 miles above the confluence with the San Gabriel River. The North Fork of the San Jose Creek is also lined until about 1 mile above the confluence. Groundwater upwelling has been observed at perforations in the concrete lining of San Jose Creek. It appears that under current conditions, POWRP discharges are a secondary component of dry-season flows in lower San Jose Creek. Proposed POWRP effluent management is not anticipated to

alter discharge rates substantially, and it is anticipated that the annual average daily discharge at PW001 would increase slightly from 4 MGD to a range of 5 to 6 MGD (Table 11-18). The range in monthly average discharges under the program would also likely be comparable to baseline conditions (Table 11-5). Because POWRP discharges are a secondary component of flows in San Jose Creek, the change in treated effluent discharged under the program would not have the potential to significantly affect water quality or beneficial uses of the receiving water. Impacts would be less than significant.

Except under flood flows, when POWRP discharges are a negligible portion of total stream flow, POWRP discharges are conveyed through Reach 2 of San Jose Creek and infiltrated within the unlined Reach 1 (Figure 11-3). Designated beneficial uses in these reaches include existing use WILD; intermittent uses GWR, REC-2, and WARM; potential or intermittent use REC-1; and conditional potential use MUN (Table 11-12).

The designation WILD refers to wildlife habitat. Reach 2 of San Jose Creek is fully lined and unvegetated, and thus has little potential to provide habitat for terrestrial species; however, it may be occupied by aquatic species, chiefly invertebrates and fishes. Reach 1 of San Jose Creek is unlined and contains aquatic habitat fringed by riparian vegetation. Because the program would maintain discharges comparable to those occurring under current conditions, there is little potential to affect these beneficial uses. Impacts would be less than significant.

The designations GWR, REC-2, and WARM refer to groundwater recharge, non-contact recreational use, and warm fresh water habitat, respectively, and apply to seasonal flows in intermittently flowing waters. Because POWRP discharges are infiltrated to groundwater in Reach 1 of San Jose Creek, and because the program would maintain discharges comparable to those occurring under current conditions, there is little potential to affect use GWR. Also, because the program would maintain discharges comparable to those occurring under current conditions, there is little potential to affect the existing beneficial uses REC-2 and WARM. Impacts would be less than significant.

The designation REC-1 and MUN, refer to contact recreational use and municipal and domestic water supply, respectively. The use MUN would be better supported by direct service from a treated wastewater source such as the POWRP rather than by pumping treated wastewater from a stream channel, as previously discussed for the SJCWRP. Accordingly, impacts on this beneficial use would be less than significant. The REC-1 use would not be affected because the program would maintain discharges comparable to those occurring under current conditions. Impacts would be less than significant.

Los Coyotes Water Reclamation Plant – WRP Effluent Management

Operation

Operation of the LCWRP under the program would result in a change to effluent management at the WRP. This change could result in a violation of regulatory standards as described for the SJCWRP.

Treated effluent from the LCWRP is discharged in accordance with a current NPDES permit (permit CA0054011). The LCWRP is consistently compliant with the terms of this permit; a 1-day effluent violation occurred in April 2010, and before that, another 1-day violation occurred in March 2008. Accordingly, it is assumed that discharges from the LCWRP are compliant with the terms of the plant's NPDES permit, and that the treated effluent discharged from the LCWRP does not currently contribute to a degradation of water quality in the receiving waters in the form of pollutant loading. Wastewater at the LCWRP would continue to be treated as in the past, and there would be no changes to the treatment process at the WRP that would modify the quality of the effluent discharged. Therefore, the change in

volume of treated effluent would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code and would not cause the existing LCWRP NPDES permit to be violated. Impacts would be less than significant.

The LCWRP would continue to discharge from LC001 into Reach 1 of the San Gabriel River. It is anticipated that the annual average daily discharge at LC001 would increase or decrease from 25 MGD to a range of 12 to 31 MGD (Table 11-18). The range in monthly average discharges under the program would likely be comparable to baseline conditions (Table 11-5). Change in discharge would occur due to increases in wastewater inflow to the WRP resulting from a growing population within the service area, as well as changes in other factors, such as land use. At the same time, there would be additional allocation of treated effluent that water purveyors in the region would use to meet the state mandate regarding recycled water described in Section 11.3.2.2. Because the volume and temporal variability of discharges from the LCWRP would not change substantially under the program, there is little potential for these changes to cause a regulatory standard to be violated. Impacts would be less than significant.

Beneficial uses in the affected portion of the San Gabriel River (Reach 1), previously detailed in the discussion of SJCWRP discharges to Reach 1, would apply to the LCWRP, which also discharges into Reach 1 of the San Gabriel River. Impacts would be less than significant.

A discussion of proposed operational changes at the WRPs that discharge into the San Gabriel River (i.e., the SJCWRP, LCWRP, and LBWRP) that could affect the San Gabriel River Tidal Prism and Estuary is provided later in this impact analysis.

Long Beach Water Reclamation Plant – WRP Effluent Management

Operation

Operation of the LBWRP under the program would result in a change to effluent management at the WRP. This change could result in a violation of regulatory standards, as described for the SJCWRP.

Treated effluent from the LBWRP is discharged in accordance with a current NPDES permit (permit CA0054119). The LBWRP is consistently compliant with the terms of this permit; no effluent violation has been recorded since January 2005. Accordingly, it is assumed that discharges from the LBWRP are compliant with the terms of the plant's NPDES permit and that the treated effluent discharged from the LBWRP does not currently contribute to a degradation of water quality in the receiving waters in the form of pollutant loading. Wastewater at the LBWRP would continue to be treated as in the past, and there would be no changes to the treatment process at the WRP that would modify the quality of the effluent discharged. Therefore, the change in the volume of treated effluent would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code and would not cause the existing LBWRP NPDES permit to be violated. Impacts would be less than significant.

The LBWRP would continue to discharge from LB001 into Coyote Creek, just upstream of its confluence with the San Gabriel River. It is anticipated that the annual average daily discharge at LB001 would increase or decrease from 12 MGD to a range of 9 to 14 MGD (Table 11-18). The range in monthly average discharges under the program would likely be comparable to baseline conditions (Table 11-5). Change in discharge would occur due to increases in wastewater inflow to the WRP resulting from a growing population within the service area, as well as changes in other factors, such as land use. At the same time, there would be additional allocation of treated effluent that water purveyors in the region would use to meet the state mandate regarding recycled water described in Section 11.3.2.2. Because the volume and temporal variability of discharges from the LBWRP would not be changed substantially

under the program, there is little potential for these changes to cause a regulatory standard to be violated. Impacts would be less than significant.

Beneficial uses in the affected portion of Coyote Creek include existing use RARE; intermittent use REC-2; potential uses IND, PROC, REC-1, WARM, and WILD; and conditional potential use MUN. However, because the proposed changes in effluent management would not result in any substantial changes in the volume and temporal variability of discharges from the LBWRP, there is little potential to affect these beneficial uses. Impacts would be less than significant.

A discussion of proposed operational changes at the WRPs that discharge into the San Gabriel River (i.e., the SJCWRP, LCWRP, and LBWRP) that could affect the San Gabriel River Tidal Prism and Estuary is provided later in this impact analysis.

Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

Operation of the WNWRP under the program would result in a change to effluent management at the WRP. This change could result in a violation of regulatory standards, as described for the SJCWRP.

Treated effluent from the WNWRP is discharged in accordance with a current NPDES permit (permit CA0053716). The WNWRP is consistently compliant with the terms of this permit; no violations of effluent standards have occurred since October 2008. Accordingly, it is assumed that discharges from the WNWRP are compliant with the terms of the plant's NPDES permit and that the treated effluent discharged from the WNWRP does not currently contribute to a degradation of water quality in the receiving waters in the form of pollutant loading. Wastewater at the WNWRP would continue to be treated as in the past, and there would be no changes to the treatment process at the WRP that would modify the quality of the effluent discharged. Therefore, anticipated changes in the volume of treated effluent would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code and would not cause the existing WNWRP NPDES permit to be violated. Impacts would be less than significant.

The WNWRP currently has the operational flexibility to discharge flows to the San Gabriel River, the Zone 1 Ditch, or the Rio Hondo. Flows from these discharge locations are distributed to the San Gabriel Coastal Spreading Grounds and/or the Rio Hondo Spreading Grounds. The balance of flow to receiving waters can vary greatly from day to day. This flexibility would continue under the program. It is anticipated that the annual daily average flows would increase from 5 to 9 MGD (Table 11-18). The range of monthly average discharges under the program would also likely be comparable to baseline conditions (Table 11-5). Change in discharge would occur due to increases in wastewater inflow to the WRP resulting from a growing population within the service area, as well as changes in other factors, such as land use. At the same time, there would be additional allocation of treated effluent that water purveyors in the region would use to meet the state mandate regarding recycled water described in Section 11.3.2.2. Because the volume and temporal variability of discharges from the WNWRP would not change substantially under the program, there is little potential for these changes to cause a regulatory standard to be violated. Impacts would be less than significant.

WNWRP discharges are made to the San Gabriel River, the Zone 1 Ditch, or the Rio Hondo. Except under flood flows, when WNWRP discharges are a negligible portion of total stream flow, discharges to the San Gabriel River are made to Reach 3 and infiltrated within Reach 3 and Reach 2. Discharges to the Zone 1 Ditch are made to the ditch and infiltrated within the ditch or within the Rio Hondo (Reach 2,

Figure 11-3). Discharges to the Rio Hondo are likewise infiltrated within Reach 2. Designated beneficial uses in these reaches include existing uses GWR, RARE, REC-1, REC-2, WARM, and WILD; intermittent uses GWR, REC-1, REC-2, WARM, and WILD; potential uses IND, PROC, RARE, REC-1, and WARM; and conditional potential use MUN (Table 11-12). Because the proposed changes in effluent management would not result in substantial changes in the volume and temporal variability of discharges from the WNWRP, there is little potential to affect any of these beneficial uses. Impacts would be less than significant.

San Jose Creek Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant (San Gabriel River Tidal Prism/Estuary) – WRP Effluent Management

Operation

Proposed operational changes at the WRPs would result in a net reduction in effluent volumes delivered to the lower San Gabriel River Tidal Prism and Estuary. These changes would alter the volume of fresh water flows and the pollutant loadings being delivered to the tidal prism.

No substantial changes are proposed for the LCWRP and LBWRP, which deliver discharges to the tidal prism (see previous discussion under this impact for effluent management at the LCWRP and LBWRP). Proposed changes in discharge volumes from SJCWRP discharge point SJC001 are likely to be propagated downstream to the tidal prism. The relevant discharge volumes range from an increase of 16 MGD to a reduction of 57 MGD relative to 2008 discharges, with flow reductions more likely to occur than flow increases (Table 11-5 and Table 11-18).

Existing discharge volumes are a minor component of discharges to the tidal prism, which are dominated by seawater discharges from the AES Alamitos and the Los Angeles Department of Water and Power (LADWP) Haynes electrical generating stations. These stations draw seawater for cooling purposes from Alamitos Bay and discharge the warmed seawater to the San Gabriel River. These stations have a combined maximum design cooling water flow of about 2,200 MGD, enough volume to maintain a net outflow to the ocean except on extreme high tides. Actual flow volumes are lower. For instance, during a year-long biological survey in 2006, average flow rates for both facilities combined were approximately 1,400 MGD (MBC 2003:23). These facilities may not be operated in this fashion in the near future, however, as the Long Beach Water Department has plans to deliver recycled water for cooling tower use as part of the city's Recycled Water Master Plan. However, since the amount and constitution of the water (seawater versus fresh water) that might be released from the generating stations is unknown and therefore, represents a speculative scenario under CEQA, this chapter includes the analysis for 1,400 MGD which is the existing condition. Furthermore, impacts from a cessation of ocean water cooling at Haynes Generating Units 5 and 6 are less than significant for water quality, sea turtles, eelgrass, Pacific groundfish, and coastal pelagics (LADWP 2010).

Current WRP discharges amount to 41 MGD from the SJCWRP, 25 MGD from the LCWRP, and 12 MGD from the LBWRP, totaling 78 MGD (Table 11-5). This represents approximately 5.5 percent of discharges to the tidal prism (assuming cooling water flows from the electrical generating stations equal 1,400 MGD). Under the program, this discharge total would be between 21 and 94 MGD (Table 11-18). This represents between 1.5 percent and 6.7 percent of discharges to the tidal prism. These changes when compared to the existing percentage of discharges to the tidal prism are very small, especially considering the discharge of the electrical generating stations, and thus are unlikely to result in any observable change

in either tidal flows or salinity within the estuary. Impacts related to flow volumes would be less than significant.

As previously discussed, all WRPs can be assumed to be compliant with the terms of their NPDES permits. Proposed flow reductions could only decrease pollutant loads derived from WRPs. Thus, there is no potential for proposed WRP effluent management to increase pollutant loading in the tidal prism. Given the dilution factors associated with generating station discharges, proposed changes would not substantially alter existing pollutant loading in the tidal prism. Impacts on pollutant loading and beneficial uses would be less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

Proposed solids processing facilities include construction of six new 500,000-cubic-foot anaerobic digesters and replacement of the existing sludge dewatering system facilities. The anaerobic digesters would be located at least partially underground within a developed portion of the JWPCP. The dewatering system replacement would entail construction of a new building to house the new dewatering equipment and replacement support systems. Soil type and slope at the JWPCP varies; consequently, erosion potential varies, as shown in Table 11-15. Construction would comply with Appendix J of the Los Angeles County Municipal Code, but construction on site would potentially lead to pollution of receiving waters. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize erosion, sedimentation, or other such impacts. Contractors for the proposed solids processing facilities would be required to comply with all local and other regulations as noted.

- City of Carson regulations as required, including implementation of appropriate BMPs that may include a WWECP
- NPDES General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002) for projects where 1 acre or more of soil will be disturbed; preparation of a site-specific SWPPP is required
- WDRs for Discharges of Groundwater From Construction and Project Dewatering to Surface Waters (General NPDES Permit No. CAG994004) preparation of a site-specific dewatering plan is required
- If necessary, individual permits in place of the general permits referenced above if the project does not qualify for a general permit

Because the Sanitation Districts would require the contractor to comply with all applicable regulations and permits, and because the proposed work would occur in a fully developed area without sensitive environmental resources, impacts would be less than significant.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for receiving waters. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact HYD-3. Would Alternative 1 (Program) result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion)?

Conveyance System – Conveyance Improvements

Construction

Conveyance system improvements would occur within the JOS service area but the precise locations of the planned conveyance improvements and the appropriate construction techniques are not yet known. Construction would generally take place in the existing public rights-of-way because that is the current location of the conveyance system. Conveyance system improvements could result in groundwater contamination due to release of contaminants such as fuels or lubricants during conveyance construction activities. Pollutants associated with construction activities and their typical sources are identified in Table 11-21. Because the Sanitation Districts would require the contractor to comply with all applicable regulations and permits, as noted under Impact HYD-1 (Program), and because the proposed work would occur in areas of predominately low environmental sensitivity (public rights-of-way), impacts would be less than significant. For areas where environmental sensitivity is high or unknown, the Sanitation Districts would be required to conduct subsequent CEQA review.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Construction would take place within the existing SJCWRP boundary on vegetated surfaces (lawns). Construction and excavation causes soil to be exposed, at which time contamination of groundwater could occur due to spills of contaminants, such as fuels or lubricants. Pollutants associated with construction activities and their typical sources are identified in Table 11-21. As discussed under Impact HYD-1 (Program), the Sanitation Districts would require the contractor to comply with all applicable regulations and permits. Moreover, the work would occur on site in an area of low environmental sensitivity (lawns). Therefore, impacts would be less than significant.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

Depths to groundwater at the WRPs range from 3 feet to 30 feet (Table 11-14). Construction associated with process optimization would include excavation to approximately 30 feet bgs, and groundwater has the potential to seep into the excavated areas at all sites. Construction of process optimization would contact groundwater, and could lead to groundwater contamination. Construction contaminants identified in Table 11-21, excluding sediment, could percolate into the elevated groundwater, causing contamination. The Sanitation Districts would require contractors to comply with all applicable regulations and permits, as noted under Impact HYD-1 (Program). Moreover, the proposed work would

occur at sites of low environmental sensitivity (existing WRP facilities). Therefore, impacts would be less than significant.

San Jose Creek Water Reclamation Plant – WRP Effluent Management

Operation

The SJCWRP has four effluent discharge points. SJC001 discharges to a portion of the San Gabriel River that is lined from above the discharge point to the San Gabriel River Tidal Prism and Estuary. This lining maintains a separation between surface and groundwater. Therefore, proposed changes in WRP discharges at this discharge point would not infiltrate groundwater and would not result in an increased level of groundwater contaminants. Impacts would be less than significant.

SJC002 discharges to an unlined portion of San Jose Creek, and SJC003 and SJC001A both discharge to the unlined portion of the San Gabriel River. Because the locations and volumes of discharges would not substantially change relative to existing conditions, the program would not affect either the level of groundwater contamination or affect the transport of existing groundwater contamination. Impacts would be less than significant.

A discussion of proposed operational changes at the WRPs that discharge into the San Gabriel River (i.e., the SJCWRP, LCWRP, and LBWRP) that could affect the San Gabriel River Tidal Prism and Estuary is provided later in this impact analysis.

Pomona Water Reclamation Plant – WRP Effluent Management

Operation

The POWRP discharge point PO001 is the principal source of discharge to the San Jose Creek tributary that receives the discharge, and contributes approximately one-third of dry-season flow in the receiving section of San Jose Creek. Proposed POWRP effluent management would not alter discharge rates substantially compared to 2008 baseline conditions (Table 11-18). Therefore, the program does not have the potential to change surface water to groundwater interaction in any unlined channel sections downstream of the POWRP (specifically, the lower 6,000 feet of San Jose Creek and the San Gabriel River downstream from that point to the San Gabriel Coastal Spreading Grounds). Impacts would be less than significant.

Los Coyotes Water Reclamation Plant and Long Beach Water Reclamation Plant – WRP Effluent Management

Operation

Both the LCWRP and LBWRP discharge to Reach 1 of the San Gabriel River. The river is fully lined from above the discharge points to the San Gabriel River Tidal Prism and Estuary. This lining maintains a separation between surface and groundwater. Moreover, no substantial changes in discharge volume from these WRPs are projected to occur. Therefore, proposed changes in LBWRP and LCWRP discharges do not have the potential to infiltrate groundwater or result in an increased level of groundwater contaminants. Impacts would be less than significant.

A discussion of proposed operational changes at the WRPs that discharge into the San Gabriel River (i.e., the SJCWRP, LCWRP, and LBWRP) that could affect the San Gabriel River Tidal Prism and Estuary is provided later in this impact analysis.

Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

The WNWRP has the operational flexibility to discharge flows to the San Gabriel River, the Zone 1 Ditch, or the Rio Hondo. Flows from these discharge locations are distributed to the San Gabriel Coastal Spreading Grounds and/or the Rio Hondo Spreading Grounds. The balance of flow to receiving waters can vary greatly from day to day. In general, over 50 percent of the WNWRP's treated flow would be delivered to either spreading ground over the course of a year. The current average annual discharge of 5 MGD would be increased to approximately 9 MGD and would, as now, function primarily to infiltrate to groundwater at the spreading grounds. The discharge would continue to be tertiary-treated and meet all NPDES permit requirements as it currently does. Because no potential groundwater contamination issues have been identified with regard to current practices at the spreading grounds, the proposed increases in effluent discharge do not have the potential to result in an increased level of groundwater contaminants. Impacts would be less than significant.

San Jose Creek Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant (San Gabriel River Tidal Prism/Estuary) – Effluent Management

Operation

As discussed under Impact HYD-1 (Program), existing WRP discharges represent a 5.5 percent of total discharges to the tidal prism, which is dominated by seawater discharges from the AES Alamitos and LADWP Haynes electrical generating stations. Under the program, the discharge would represent between 1.5 percent and 6.7 percent of discharges to the tidal prism. These changes, when compared to the existing percentage of discharges to the tidal prism, are very small and thus are unlikely to result in any observable change in either tidal flows or salinity within the estuary. Proposed discharges would have a negligible potential to affect salinity in the tidal prism. Impacts on saltwater intrusion would be less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

Proposed solids processing facilities include construction of six new 500,000-cubic-foot anaerobic digesters and replacement of the existing sludge dewatering system facilities. The anaerobic digesters would be located at least partially underground within a developed portion of the JWPCP. Replacement of the sludge dewatering system facilities would entail construction of a new building to house the new dewatering equipment and replacement of support systems. Construction could contact groundwater, and could lead to groundwater contamination. Construction contaminants identified in Table 11-21, excluding sediment, could percolate to groundwater, causing contamination. However, the Sanitation Districts would require all contractors to comply with all applicable regulations and permits, as noted under Impact HYD-1 (Program). Moreover, the work would be performed in an area of low environmental sensitivity (the existing JWPCP site). Impacts would be less than significant.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion). Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-4. Would Alternative 1 (Program) cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act?

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, and Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

As part of the Sanitation Districts' water reuse program, treated effluent is released to the San Gabriel River and the Rio Hondo and conveyed to the San Gabriel Coastal Spreading Grounds and the Rio Hondo Spreading Grounds. The spreading grounds sustain the groundwater supply for the production wells that are part of the Central Basin's potable water supply. There are approximately 19 production wells located within proximity of the Rio Hondo and San Gabriel Coastal Spreading Grounds (Water Replenishment District 2008) and over 100 production wells in the Central Basin.

Under the program, the Sanitation Districts' discharge into receiving waters would continue to be tertiary treated and, therefore, suitable for recharge purposes. The Water Replenishment District and the water purveyors who operate the production wells monitor groundwater quality per Title 22. The Water Replenishment District limits the amount of treated effluent recharged per Order Nos. 91-100 and R4-2009-0048. Under the program, it is anticipated that the Water Replenishment District would continue to receive tertiary-treated effluent under contract with the Sanitation Districts. As discussed under Impact HYD-3 (Program), proposed changes in discharge volumes would have little potential to change the surface water to groundwater interaction in unlined channels of receiving waters. Furthermore, because the discharge is tertiary treated and the percentage of overall recharge that can be treated effluent is regulated, effluent management from the POWRP, SJCWRP, and WNWRP would not cause regulatory water quality standards at an existing production well to be violated. Impacts would be less than significant.

A discussion of proposed operational changes at the WRPs that discharge into the San Gabriel River (including the SJCWRP) that could affect the San Gabriel River Tidal Prism and Estuary is provided below.

San Jose Creek Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant (San Gabriel River Tidal Prism/Estuary) – WRP Effluent Management

Operation

As discussed under Impact HYD-1 (Program), proposed operational changes at the WRPs could result in a net reduction in effluent volumes delivered to the lower San Gabriel River Tidal Prism and Estuary. Such changes would alter the volume of fresh water flows entering the tidal prism, potentially resulting in increased salinity within the tidal prism and a resultant increase in saltwater intrusion within connected aquifers. This could result in saltwater contamination at existing production wells.

However, as discussed under Impact HYD-1 (Program), existing WRP discharges only amount to 5.5 percent of total discharges to the tidal prism. Under the program, these discharges would represent between 1.5 and 6.7 percent of total discharges to the tidal prism. Proposed discharges would have a negligible potential to affect salinity in the tidal prism. Impacts related to contamination by saline groundwater at existing production wells would be less than significant.

CEQA Impact Determination

Operation of Alternative 1 (Program) would not cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act. Impacts would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact HYD-5. Would Alternative 1 (Program) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?

Conveyance System – Conveyance Improvements

Construction

During construction, site drainage would be altered due to excavation, soil stockpiling, dewatering, etc., and these activities could lead to erosion or siltation on or off site caused primarily by an increase in exposed soils. Because the precise location of the planned conveyance improvements and the appropriate construction techniques are not known at this time, the specific location of potential effects cannot be determined. However, the Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as appropriate on conveyance system construction projects for both the installation of new sewers and the rehabilitation of existing sewers. Contractors would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Program). Moreover, the work would

generally be performed in areas of low environmental sensitivity (public rights-of-way). Therefore, impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion; San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

As described for the conveyance system, the Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize erosion or siltation. Contractors for the construction of process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Program). Moreover, the work would be performed in areas of low environmental sensitivity (existing WRP facilities). Therefore, impacts would be less than significant.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, and Whittier Narrows Water Reclamation Plant – WRP Effluent Management

Operation

Effluent discharges would occur to the same receiving waters as occur now, and in similar volumes. There would be no impact.

Joint Water Pollution Control Plant – Solids Processing

Construction

Construction of the solids processing anaerobic digesters would occur approximately 30 feet bgs. During construction, site drainage would be altered due to excavation, soil stockpiling, dewatering, etc., and these activities could lead to erosion or siltation on or off site caused primarily by an increase in exposed soils. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize erosion or siltation. Contractors for the proposed solids processing facilities would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Program). Moreover, the work would be performed in an area of low environmental sensitivity (the existing JWPCP). Impacts would be less than significant.

CEQA Impact Determination

Construction of Alternative 1 (Program) would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site. Impacts would be less than significant. Operation of Alternative 1 (Program) would have no impacts.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-7. Would Alternative 1 (Program) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Conveyance System – Conveyance Improvements

Construction

Runoff could be generated during the construction of the conveyance improvements due to the need to wet down the soil for dust control if employed improperly or if pollutants, such as sediments, were to increase in concentration. This could result in runoff in amounts that would overwhelm the stormwater drainage system. However, the Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any construction-related runoff impacts. These standard practices and bid requirements are used as appropriate on conveyance system construction projects for both the installation of new sewers and the rehabilitation of existing sewers. Contractors would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Program). Moreover, the work would generally be performed in areas of low environmental sensitivity (public rights-of-way). Therefore, impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Stormwater controls would be necessary to prevent runoff in amounts that would overwhelm the stormwater drainage system and to prevent pollutants, such as sediments, to increase in concentration. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to prevent or reduce pollutants in runoff. Contractors would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Program). Moreover, the work would be performed in an area of low environmental sensitivity (the existing WRP facilities). Therefore, impacts to be less than significant.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

Stormwater controls would be necessary to prevent runoff in amounts that would overwhelm the stormwater system. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to prevent runoff from construction. Contractors for the construction of process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Program). Moreover, the work would be performed in areas of low environmental sensitivity (existing WRP facilities). Therefore, impacts would be less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

Stormwater controls would be necessary to prevent runoff in amounts that would overwhelm the system and to prevent pollutants, such as sediments, to increase in concentration. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to prevent or reduce pollutants in runoff. Contractors for the construction of the solids processing facilities would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Program). Moreover, the work would be performed in areas of low environmental sensitivity (the existing JWPCP). Therefore, impacts would be less than significant.

CEQA Impact Determination

Construction of Alternative 1 (Program) would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-11. Would Alternative 1 (Program) be subject to inundation by seiche, tsunami, or mudflow?

Pomona Water Reclamation Plant – Process Optimization

Construction

The POWRP is located below Elephant Hill, and portions of the site are in a landslide hazard area. Elephant Hill is designated as open space and is not regularly maintained. While the risk to the site from a wildfire is low, a fire on Elephant Hill would leave the slope exposed and more vulnerable to mudflows. A mudflow is a flooding condition in which the river of liquid and flowing mud moves on the surface of normally dry land areas (NFIP 2010). The charred and exposed soil in burned areas can become saturated during rains, and properties that were directly affected by the fire and those located below or downstream of the burn areas would be at risk once the winter rainy season commences. It can take up to 5 years for the vegetation to return to its previous state. Without vegetation, soils on steep slopes can become saturated during rains, liquefy, and then flow down hills as powerful mudflows.

During construction of the process optimization facilities, severe weather or the combination of severe weather and post-burn conditions could expose construction workers and equipment to a risk from mudflows. In consideration of existing fire control policies, the absence of fire from the area in recent years, and the relatively brief time frame of construction, this risk is small but real. Impacts would be significant before mitigation. Implementation of Mitigation Measure (MM) HYD-11 would reduce impacts to less than significant.

Operation

The process optimization facilities would be placed predominately underground and, therefore, would not be subject to mudflows. Impacts during operations would be less than significant.

CEQA Impact Determination

Construction of process optimization at the POWRP for Alternative 1 (Program) would be subject to inundation by seiche, tsunami, or mudflow. Impacts would be significant before mitigation. Operation of Alternative 1 (Program) would result in less than significant impacts.

Mitigation

MM HYD-11. During the final design process, perform a geotechnical investigation. If it is determined that there is a potential for mudflow during construction of process optimization at the Pomona Water Reclamation Plant due to risks associated with severe weather or the combination of severe weather and post-burn conditions on Elephant Hill, a construction safety plan will be developed prior to construction activities and will include procedures to avoid risks to workers during the construction period. Procedures could include sandbagging and reseeding the burned area immediately following a fire to reestablish vegetation to buffer rainfall and promote a root system to help secure soil in place. Additionally, weather patterns will be monitored and construction will cease if weather could contribute to mudflow conditions.

Residual Impacts

The construction site for process optimization at POWRP would be at risk of a landslide if the vegetation cover on Elephant Hill were to burn and subsequently be subject to a prolonged period of heavy rain. Implementation of MM HYD-11 would minimize risks to construction workers and capital improvements. Residual impacts would be less than significant.

11.4.3.2 Project

Impact HYD-1. Would Alternative 1 (Project) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody?

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

There are two possible construction activities that could cause conditions resulting in a violation of regulatory standards at these shaft sites: (1) the construction of the shafts and (2) the generation of the slurry and nuisance water during tunneling. Therefore, water quality could be impaired in receiving waters through spillage of contaminants from construction equipment use at the shaft sites, erosion from exposed soils, or improper disposal of nuisance water or slurry removed from the tunnel that must be dewatered at the working shaft sites.

Contaminant spills could result from leakage or spillage of construction chemicals such as fuels, lubricants, paints, and other pollutants listed in Table 11-21. Such spilled materials could be conveyed in runoff during rainfall events. Discharge of dewatering waters may impair surface water quality. As

discussed in Chapter 10, the JWPCP East shaft site is known to have existing contaminated groundwater and the TraPac, LAXT, and Southwest Marine shaft sites are in close proximity to contaminated sites with the potential to affect groundwater. Depth to groundwater at the shaft sites ranges from 10 to 15 feet bgs at the Southwest Marine, LAXT, TraPac shaft sites, and 25 to 30 feet bgs at the JWPCP East shaft site (Table 11-17). As shown in Table 11-17, the depth of the shaft would range from 115 to 170 feet bgs, depending on location. Construction would come into contact with groundwater. The volume of dewatering required would depend, in part, upon the shaft construction method, which was discussed in Section 11.4.1.2.

The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as appropriate on construction projects. In general, contractors are required to comply with all local and other regulations as noted.

- City of Carson and LACDPW regulations as required, including implementation of appropriate BMPs that may include a WWECP
- NPDES General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002) for projects where 1 acre or more of soil will be disturbed; preparation of a site-specific SWPPP is required
- WDRs for Discharges of Groundwater From Construction and Project Dewatering to Surface Waters (General NPDES Permit No. CAG994004); preparation of a site-specific dewatering plan is required
- If necessary, individual permits in place of the general permits referenced herein if the project does not qualify for a general permit

Because the Sanitation Districts would require the contractor to comply with all applicable stormwater, dewatering, and water quality regulations and permits, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in

the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact HYD-2. Would Alternative 1 (Project) adversely change the level, rate, or direction of flow of groundwater?

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis
As discussed under Impact HYD-1 (Project), construction of the shafts would come in contact with groundwater. The alteration of groundwater would be minimized by the use of construction techniques. For example, as discussed in Section 11.4.1.2, each of the three techniques proposed for shaft excavation incorporates measures that greatly retard potential leakage of groundwater into the excavation. Slurry diaphragm walls do this by creating hydraulic pressures within the excavation that equalize hydraulic pressure within the groundwater, while ground freezing and sequential excavation minimize groundwater intrusion by placing an impervious barrier between groundwater and the excavation. Use of these methods would minimize the potential to alter the direction of groundwater flow. The largest of the shafts would be the working shaft; depending on construction method used, the shaft may preclude groundwater movement over a distance of as much as 60 feet in diameter. This is a small cross-section relative to the areal extent of groundwater units (aquifers) and would not substantially impede groundwater flow. The remaining shafts would have smaller diameters and a proportionally smaller potential to impede groundwater flow. Therefore, impacts on the level, rate, and direction of groundwater flow would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
Operational impacts would be the same as construction impacts; once operational, the shafts would block a portion of the groundwater flow. However, each shaft would have a small cross-section relative to the areal extent of various groundwater units. Therefore, impacts of the operating shaft on groundwater flow would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not adversely change the level, rate, or direction of flow of groundwater. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 1 (Project) would not adversely change the level, rate, or direction of flow of groundwater. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-3. Would Alternative 1 (Project) result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion)?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

Construction of the onshore tunnel could result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination by existing contaminated groundwater entering the tunnel during construction, or, by temporarily halting one of the Dominguez Gap Barrier Project injection wells, could allow saltwater intrusion into existing aquifers.

As discussed under Impact HYD-1 (Project) and HYD-2 (Project), there is typically some leakage from groundwater into the excavation area around the TBM cutting head. Furthermore, some water typically enters the excavation by entrainment in cuttings. As previously discussed in HYD-2 (Project), there is very little potential for tunneling to affect the rate and direction of groundwater flow. Furthermore, volumes would be minimized because of the methods of tunnel construction. Therefore, impacts would be less than significant.

During construction of the onshore tunnel, the alignment would extend past the Dominguez Barrier Gap Project injection well on E Street. As discussed in Section 11.2.3.1, the injections wells of the Dominguez Barrier Gap Project inject fresh water into the aquifers to prevent saltwater intrusion. The TBM would be designed to accommodate pressures required to prevent leakage of injection well water into the tunnel. Additionally, construction would not result in the temporary shutdown of any of the injection wells. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

Groundwater contamination could occur in association with spills within the shaft excavation or on the ground surface in the construction area. Shaft construction also has the potential to affect existing groundwater contamination, primarily by affecting the direction and rate of groundwater flow via construction and any associated dewatering activities.

Contaminant spills could occur through leakage or spillage of construction chemicals such as fuels, lubricants, paints, and other pollutants listed in Table 11-21. Such spilled materials could then infiltrate to groundwater or contact dewatering discharge.

As discussed in Chapter 10, the JWPCP East shaft site is known to have existing contaminated groundwater (the site is currently under remediation) and the TraPac, LAXT, and Southwest Marine shaft sites are within close proximity of areas known to have contaminated soil and/or groundwater. As discussed under Impact HYD-1 (Program and Project), dewatering is required when groundwater seeps into excavated areas during construction. The removal of groundwater from the shafts could result in the migration of groundwater, and any contamination within it, throughout the subsurface. However, as discussed in HYD-2, the techniques employed to construct the shafts would minimize the need for dewatering and, therefore, reduce the potential for any groundwater contamination to migrate. Therefore, it is unlikely that dewatering would affect the fate of existing contaminated groundwater.

As discussed under Impact HYD-1 (Project), because the Sanitation Districts would require the contractor to comply with all applicable dewatering and water quality regulations and permits, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion). Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion). Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-4. Would Alternative 1 (Project) cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

As discussed under Impact HYD-2 (Project), construction of the onshore tunnel alignment would not substantially change groundwater flows (direction or rate). Furthermore, as discussed previously under Impact HYD-3 (Project), construction would have a less than significant impact on groundwater contamination and the Dominguez Gap Barrier Project injection wells. Therefore, production wells would not be affected by construction of the onshore tunnel alignment. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – JWPCP East

Construction

CEQA Analysis

Shaft construction could potentially violate regulatory water quality standards at an existing production well, either by introducing contaminants to groundwater, or by altering groundwater flow in a manner that would alter the distribution of existing contaminated groundwater.

The potential for shaft site construction to introduce contaminants to the groundwater is analyzed under Impact HYD-3 (Project). As discussed in Impacts HYD-1 and HYD-3 (Project), the Sanitation Districts would require the contractor to comply with all applicable stormwater, dewatering, and water quality regulations and permits. In addition, no existing production wells have been identified that could be affected by shaft site construction activities. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-5. Would Alternative 1 (Project) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

There are no existing waterbodies located on the shaft sites. The TraPac, LAXT, and Southwest Marine shaft sites are primarily covered by impervious surfaces. The JWPCP East shaft site is currently a vacant disturbed lot with some impervious surfaces associated with the remediation facilities. Under existing conditions, stormwater flows and other runoff are conveyed to surface waters via existing stormwater systems within the immediate vicinity of the shaft sites. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as appropriate on construction projects. Contractors would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Project). Moreover, the work would be performed in an area of low environmental

sensitivity (previously developed, impervious surfaces or disturbed vegetation). Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-7. Would Alternative 1 (Project) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

As discussed under Impact HYD-1 (Project), construction at the shaft sites would result in surface disturbance that could involve a significant volume of runoff water. However, the Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as appropriate on construction projects. Contractors would be required to comply with applicable regulations and permits as noted under Impact HYD-1 (Project). Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-11. Would Alternative 1 (Project) be subject to inundation by seiche, tsunami, or mudflow?

Shaft Sites – TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

Shaft sites in the Port of Los Angeles are located in a highly developed area with shallow to flat topography. Mudflows would not occur at the shaft sites due to the lack of steep slopes and lack of exposed natural ground. A seiche is also unlikely due to a lack of confined bodies of water (e.g., lakes or ponds) in the area.

The TraPac, LAXT, and Southwest Marine shaft sites are located in the Port of Los Angeles, which is located in a tsunami zone. A model has been developed specifically for the Los Angeles and Long Beach Port Complex to predict tsunami wave heights. The model specifically examined seven different earthquake- and landslide-generated tsunami scenarios and considered local landfill configurations, bathymetric features, and the interaction of tsunami wave propagation to predict tsunami wave heights that could affect the port complex (Moffatt and Nichol 2007). The model predicts tsunami wave heights with respect to mean sea level, which is a reasonable, average condition under which a tsunami might occur (Moffatt and Nichol 2007). The tsunami study identified the lowest deck elevations throughout the

Port of Los Angeles using various sources of data; these locations included Angels Gate, Pier 400, Pier 300, the Los Angeles Main Channel entrance, the Vincent Thomas Bridge, and the Los Angeles West Channel. Based on the model results, it appears none of the shaft sites would be susceptible to overtopping by a tsunami with characteristics defined by the model (Moffatt and Nichol 2007). Additionally, because of the location of the port complex (i.e., along the California coast), the tsunami risk is considered by the Los Angeles Harbor Department (LAHD) as the average or normal condition for most on- and near-shore locations in Southern California (Port of Los Angeles 2009). Finally, due to the infrequent occurrence of surface fault rupture as described by the model and the short duration of construction, the probability that a seismic event and subsequent tsunami would coincide with construction activities is very low.

Discussed in greater detail in Chapter 16, these three shaft sites would be subject to the following emergency response and evacuation plans: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR; the Confined Space Entry Program; Title 8, Subchapter 20, Tunnel Safety Orders, of the CCR; the LAHD Emergency Procedures Plan; the City of Los Angeles Emergency Operations Master Plan; the Harbor Fire Protection Master Plan; and the Los Angeles County Operational Area Emergency Response Plan. The Los Angeles Emergency Operations Master Plan and Procedures includes the Los Angeles Harbor Department Plan and Tsunami Response Plan Annex, which details the responsibilities of the LAHD, the City of Los Angeles, and the City of Los Angeles Emergency Management Department in the event of a tsunami. The annex identifies evacuation routes for the San Pedro and harbor areas and specifies evacuation locations. According to the plan, the mission of the LAHD with respect to a tsunami is to provide employees, tenants, and the public with a safe, well planned, and organized method of evacuating the Port of Los Angeles area. The plan outlines several actions for which the Los Angeles Port Police are responsible, including following the established evacuation checklist, evacuating the affected tsunami inundation zone, and activating notification procedures. Additionally, an Annex: Tsunami Preparedness and Response Plan (Sanitation Districts 2008) has been developed by the Sanitation Districts in support of the Los Angeles County Operational Area Emergency Response Plan Tsunami Annex (Los Angeles County Office of Emergency Management 2006). As discussed in Chapter 16, the contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans.

Based on the low probability of a tsunami occurring during construction and the emergency plans currently in place to manage a tsunami should one occur, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf and Existing Ocean Outfalls

Construction

CEQA Analysis

The riser and diffuser areas are not at risk for mudflows or seiches due to the lack of exposed steep slopes or confined bodies of water in the area. Furthermore, these areas are located in the ocean and, therefore, not subject to mudflows or seiches.

However, the SP Shelf riser and diffuser area and the existing ocean outfalls are located in a tsunami zone. Fault rupture, if it were to occur, could generate a tsunami large enough to affect these sites. However, due to the infrequent occurrence of surface fault rupture and the short duration of construction, the probability that a seismic event and subsequent tsunami would coincide with construction activities is very low. Construction workers would either be in boats, barges, or on a platform above the riser. Typically, a seiche or tsunami does not have an impact on boats because the wave travels under the boat. Construction platforms on the SP Shelf would be built to withstand seismic activity and related wave action. Risk of exposure to tsunami is considered by the LAHD as the average or normal condition for most on- and near-shore locations in Southern California (Port of Los Angeles 2009). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not be subject to inundation by seiche, tsunami, or mudflow. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not be subject to inundation by seiche, tsunami, or mudflow. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

11.4.3.3 Impact Summary – Alternative 1

Impacts on hydrology, water quality (fresh water), and public health analyzed in this EIR/EIS for Alternative 1 are summarized in Table 11-22 and Table 11-23. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 11-22. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact HYD-1. Would Alternative 1 (Program) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving waterbody?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
WNWRP			
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Impact HYD-3. Would Alternative 1 (Program) result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion)?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 11-22 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
WNWRP			
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Impact HYD-4. Would Alternative 1 (Program) cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, and Chapter 15 and in the Safe Drinking Water Act?			
SJCWRP			
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
POWRP			
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 11-22 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
LCWRP			
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
LBWRP			
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
WNWRP			
Effluent Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact HYD-5. Would Alternative 1 (Program) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Effluent Management	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Effluent Management	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
WNWRP			
Effluent Management	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 11-22 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact HYD-7. Would Alternative 1 (Program) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Impact HYD-11. Would Alternative 1 (Program) be subject to inundation by seiche, tsunami, or mudflow?			
POWRP			
Process Optimization	CEQA Significant Impact During Construction	MM HYD-11. During the final design process, perform a geotechnical investigation. If it is determined that there is a potential for mudflow during construction of process optimization at the Pomona Water Reclamation Plant due to risks associated with severe weather or the combination of severe weather and post-burn conditions on Elephant Hill, a construction safety plan will be developed prior to construction activities and will include procedures to avoid risks to workers during the construction period. Procedures could include sandbagging and reseeding the burned area immediately following a fire to reestablish vegetation to buffer rainfall and promote a root system to help secure soil in place. Additionally, weather patterns will be monitored and construction will cease if weather could contribute to mudflow conditions.	CEQA Less Than Significant Impact During Construction

Table 11-22 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 11-23. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HYD-1. Would Alternative 1 (Project) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-2. Would Alternative 1 (Project) adversely change the level, rate, or direction of flow of groundwater?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-23 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 11-23 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HYD-3. Would Alternative 1 (Project) result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion)?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-23 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HYD-4. Would Alternative 1 (Project) cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, and Chapter 15 and in the Safe Drinking Water Act?				
Tunnel Alignment				
Wilmington to SP (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-5. Would Alternative 1 (Project) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-23 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-7. Would Alternative 1 (Project) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-11. Would Alternative 1 (Project) be subject to inundation by seiche, tsunami, or mudflow?				
Shaft Site				
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-23 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

11.4.4 Alternative 2

11.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

11.4.4.2 Project

The impacts for the onshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact HYD-11. Would Alternative 2 (Project) be subject to inundation by seiche, tsunami, or mudflow?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
Impacts from construction of the riser and diffuser on the PV Shelf would be the same as discussed for the SP Shelf under Alternative 1 (Project). Although fault rupture could generate a tsunami large enough to affect the construction site, the probability that a seismic event would coincide with construction activities is very low. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination
Construction of Alternative 2 (Project) would not be subject to inundation by seiche, tsunami, or mudflow. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 2 (Project) would not be subject to inundation by seiche, tsunami, or mudflow before mitigation. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

11.4.4.3 Impact Summary – Alternative 2

Impacts on hydrology, water quality (fresh water), and public health for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 11-22. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 11-24. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 11-24. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HYD-1. Would Alternative 2 (Project) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-2. Would Alternative 2 (Project) adversely change the level, rate, or direction of flow of groundwater?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 11-24 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact HYD-3. Would Alternative 2 (Project) result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion)?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-24 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-4. Would Alternative 2 (Project) cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, and Chapter 15 and in the Safe Drinking Water Act?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-24 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HYD-5. Would Alternative 2 (Project) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-7. Would Alternative 2 (Project) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-24 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-11. Would Alternative 2 (Project) be subject to inundation by seiche, tsunami, or mudflow?				
Shaft Site				
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-24 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

11.4.5 Alternative 3

11.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

11.4.5.2 Project

The impacts for the riser/diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as those described for Alternative 2 (Project). The impacts for the existing ocean outfalls for Alternative 3 (Project) would be the same as those described for Alternative 1 (Project).

Impact HYD-1. Would Alternative 3 (Project) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody?

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

There are two possible construction activities that could cause conditions resulting in a violation of regulatory standards at these shaft sites: (1) the construction of the shafts and (2) the generation of the slurry and nuisance water during tunneling. Water quality could be impaired in receiving waters through spillage of contaminants from construction equipment use at the shaft sites, erosion from exposed soils, or improper disposal of nuisance water or slurry removed from the tunnel that must be dewatered at the working shaft sites.

The impact analysis for the JWPCP West and Angels Gate shaft sites would be the same as provided under Impact HYD-1 (Project) for Alternative 1 for the spillage of contaminants and soil erosion, although the potential for soil erosion and runoff would be greater at the Angels Gate shaft site because of the site's sloping topography (see Chapter 8). The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as appropriate on construction projects. Contractors would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Project) for Alternative 1. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-2. Would Alternative 3 (Project) adversely change the level, rate, or direction of flow of groundwater?

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

Impacts from construction of the JWPCP West and Angels Gate shaft sites would be similar to those discussed for the shaft sites under Alternative 1 (Project). Construction of the shafts would come in contact with groundwater. The alteration of groundwater would be minimized by the use of construction techniques. Use of these methods would minimize the potential to alter the direction of groundwater flow. Furthermore, as discussed under Impact HYD-2 (Project) for Alternative 1, each shaft would have a small cross-section relative to the areal extent of groundwater units (aquifers) and would not have the potential to substantially impede groundwater flow. Therefore, impacts on the level, rate, and direction of groundwater flow would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Operational impacts would be the same as construction impacts; once operational, the shafts would block a portion of the groundwater flow. However, each shaft would have a small cross-section relative to the areal extent of various groundwater units. Therefore, impacts of the operating shaft on groundwater flow would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation of Alternative 3 (Project) would not adversely change the level, rate, or direction of flow of groundwater. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 3 (Project) would not adversely change the level, rate, or direction of flow of groundwater. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-3. Would Alternative 3 (Project) result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion)?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

Impacts from construction of the Figueroa/Gaffey to PV Shelf onshore alignment would be similar to those discussed for the Wilmington to SP Shelf onshore alignment under Alternative 1 (Project). However, this tunnel alignment would not traverse near any injection wells at the Dominguez Gap Barrier Project because of the different location of the alignment. As previously discussed under Impact HYD-2, there is very little potential for tunneling to affect the rate and direction of groundwater flow. Furthermore, dewatering volumes would be minimized because of the methods of tunnel construction. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

Groundwater contamination could occur in association with spills within the shaft excavation or on the ground surface in the construction area. Shaft construction also has the potential to affect existing groundwater contamination, primarily by affecting the direction and rate of groundwater flow via construction and any associated dewatering activities, as discussed in HYD-3 (Project) Alternative 1. Impacts from construction of the JWPCP West and Angels Gate shafts would be slightly less than those discussed for the shaft sites in Alternative 1 (Project). This is because the JWPCP West and Angels Gate shaft sites currently are not listed on a hazardous materials database and are not known to have any contaminants at concentrations exceeding relevant statutory criteria, as discussed in Chapter 10. Therefore, there is a low potential for existing groundwater contamination at these two shaft sites. Furthermore, the techniques employed to construct the shafts would minimize the need for dewatering, and thus would reduce the potential for groundwater to migrate. However, as discussed under Impacts HYD-1 and HYD-3 (Project) for Alternative 1, and in Chapter 10, accidental spills of diesel, lubricants, or other chemicals could occur during construction.

As discussed under Impact HYD-1 (Project) for Alternative 1, the Sanitation Districts would require the contractor to comply with all the applicable dewatering and water quality regulations and permits; thus impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not result in an increased level of groundwater contamination or would not affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion). Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not result in an increased level of groundwater contamination or would not affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion). Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-4. Would Alternative 3 (Project) cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

As discussed under Impacts HYD-2 and HYD-3 (Project), construction of the onshore tunnel alignment would have a less than significant impact on groundwater contamination, would not substantially change groundwater flows, and would not affect the fate and transport of existing groundwater contamination. Therefore, production wells would not be affected by construction of the onshore tunnel alignment. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – JWPCP West

Construction

CEQA Analysis

Impacts from construction of the JWPCP West shaft site would be similar to those discussed for the JWPCP East shaft site in Alternative 1 (Project). As discussed in Impact HYD-1 (Project) and Impact HYD-3 (Project), the Sanitation Districts would require the contractor to comply with all applicable stormwater, dewatering, water quality, and other regulations and permits. In addition, no existing production wells have been identified that could be affected by shaft site construction activities. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations, Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-5. Would Alternative 3 (Project) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

There are no existing water bodies located on the shaft sites. Under existing conditions, stormwater flows and other runoff are conveyed to surface waters via existing stormwater systems within the immediate vicinity of the shaft sites. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as appropriate on construction projects. Contractors would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Project) for Alternative 1. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-7. Would Alternative 3 (Project) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

Impacts for construction of the JWPCP West and Angels Gate shaft sites would be the same to those discussed for the shaft sites in Alternative 1 (Project). As discussed under Impact HYD-1 (Project), construction of the shaft sites would result in surface disturbance that could involve a significant volume of runoff water. However, the Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as appropriate on construction projects. Contractors would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Project) for Alternative 1. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

11.4.5.3 Impact Summary – Alternative 3

Impacts on hydrology, water quality (fresh water), and public health for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 11-22. Impacts analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 11-25. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 11-25. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HYD-1. Would Alternative 3 (Project) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-2. Would Alternative 3 (Project) adversely change the level, rate, or direction of flow of groundwater?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-25 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact HYD-3. Would Alternative 3 (Project) result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion)?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-4. Would Alternative 3 (Project) cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations (CCR), Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-25 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-5. Would Alternative 3 (Project) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-7. Would Alternative 3 (Project) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-25 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HYD-11. Would Alternative 3 (Project) be subject to inundation by seiche, tsunami, or mudflow?				
Riser/Diffuser Area				
PV Shelf	CEQA Less than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

11.4.6 Alternative 4 (Recommended Alternative)

11.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

11.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years. The construction impacts for the rehabilitation of the existing ocean outfalls would be the same as for Alternative 1 (Project).

Impact HYD-1. Would Alternative 4 (Project) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody?

Shaft Site – Royal Palms

Construction

CEQA Analysis

Impacts from construction of the Royal Palms shaft site would be similar to those discussed for the shaft sites in Alternative 1 (Project). However, because the Royal Palms shaft site is an exit shaft site, nuisance water, slurry from the TBM, or other excavated material, would not be removed at this shaft site. Rather, this material would be collected and removed from the tunnel at the JWPCP West shaft site. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as

appropriate on construction projects. Contractors would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Project) for Alternative 1. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-2. Would Alternative 4 (Project) adversely change the level, rate, or direction of flow of groundwater?

Shaft Site – Royal Palms

Construction

CEQA Analysis

Impacts from construction of the Royal Palms shaft site would be similar to those discussed for the shaft sites in Alternative 1 (Project). The alteration of groundwater would be minimized by the use of construction techniques. Use of these methods would minimize the potential to alter the direction of groundwater flow. Furthermore, as discussed under Impact HYD-2 (Project) for Alternative 1, the shaft would have a small cross-section relative to the areal extent of groundwater units (aquifers) and would not

have the potential to substantially impede groundwater flow. Therefore, impacts to the level, rate, and direction of groundwater flow would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Operational impacts for the Royal Palms shaft site would be the same as those discussed for construction. Given the very shallow penetration of the underlying aquifer by the shaft (5 feet) and the large areal extent of the aquifer, the shaft would not have the potential to substantially impede groundwater flow. Therefore, impacts to the level, rate, and direction of groundwater flow would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation of Alternative 4 (Project) would not adversely change the level, rate, or direction of flow of groundwater. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 4 (Project) would not adversely change the level, rate, or direction of flow of groundwater. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-3. Would Alternative 4 (Project) result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion)?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

Impacts from construction of the Figueroa/Western to Royal Palms onshore alignment would be similar to those discussed for the Figueroa/Gaffey to PV Shelf onshore alignment under Alternative 3 (Project). This tunnel alignment also would not traverse near any injection wells at the Dominguez Gap Barrier Project. As previously discussed in HYD-2, there is very little potential for tunneling to affect the rate and direction of groundwater flow. Furthermore, dewatering volumes would be minimized because of the methods of tunnel construction. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis

Impacts from construction of the Royal Palms shaft site would be similar to those discussed for the shaft sites in Alternative 3 (Project). Shaft construction does not have the potential to affect groundwater contamination because, as detailed in Chapter 10, contaminated groundwater is not known to occur on or near the Royal Palms shaft site. However, groundwater contamination could occur in association with spills within the shaft excavation or on the ground surface in the construction area. Such spilled materials could then infiltrate to groundwater or contact dewatering discharge. As discussed under Impact HYD-1 (Project) for Alternative 1, the Sanitation Districts would require the contractor to comply with all applicable dewatering, water quality, and other regulations and permits; thus impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion). Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 4 (Project) would not result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion). Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact HYD-4. Would Alternative 4 (Project) cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations (CCR), Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis
Impacts from construction of the Figueroa/Western to Royal Palms onshore alignment would be similar to those discussed for the onshore alignment discussed under Alternative 3 (Project). As discussed under Impacts HYD-2 and HYD-3 (Project), construction of the onshore tunnel alignment would have a less than significant impact on groundwater contamination, would not substantially affect groundwater flows, and would not affect the fate and transport of existing groundwater contaminants. Therefore, production wells would not be affected by construction of the onshore tunnel alignment. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction of Alternative 4 (Project) would not cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 4 (Project) would not cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Title 22, Division 4, Chapter 15, and in the Safe Drinking Water Act. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact HYD-5. Would Alternative 4 (Project) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?

Shaft Site – Royal Palms

Construction

CEQA Analysis
There are no existing waterbodies located on the shaft site, but it is located close enough to the Pacific Ocean that overland flow of stormwater could enter the ocean. Shaft site construction could result in offsite erosion or siltation only if runoff were to leave the construction site. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as appropriate on construction projects. Contractors would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Project) for Alternative 1. Therefore, impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction of Alternative 4 (Project) would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 4 (Project) would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact HYD-7. Would Alternative 4 (Project) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Shaft Site – Royal Palms

Construction

CEQA Analysis
As discussed under Impact HYD-1 (Project), construction of the shaft site would require surface disturbance and dewatering operations. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts. These standard practices and bid requirements are used as appropriate on construction projects. Contractors would be required to comply with all applicable regulations and permits as noted under Impact HYD-1 (Project) for Alternative 1. Therefore, impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction of Alternative 4 (Project) would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact HYD-11. Would Alternative 4 (Project) be subject to inundation by seiche, tsunami, or mudflow?

Shaft Site – Royal Palms

Construction

CEQA Analysis

A mudflow is a flooding condition in which a river of liquid and flowing mud moves on the surface of normally dry land areas (NFIP 2010). Although there is an exposed slope adjacent to the Royal Palms shaft site, it is not located within a landslide hazard area. Therefore, based on the relatively short duration of construction and the low probability of a mudflow, this hazard is typically considered to pose an acceptable level of risk. Impacts would be less than significant.

A seiche is not likely to occur at the shaft site due to a lack of confined bodies of water (e.g., lakes or ponds) in the area.

The shaft site is located in a tsunami zone. Fault rupture, if it were to occur, could generate a tsunami large enough to affect the site. However, due to the infrequent occurrence of surface fault rupture and the short duration of construction, the probability that a seismic event and subsequent tsunami would coincide with construction activities is very low. Additionally, an Annex: Tsunami Preparedness and Response Plan (Sanitation Districts 2008) has been developed by the Sanitation Districts in support of the Los Angeles County Operational Area Emergency Response Plan Tsunami Annex (Los Angeles County Office of Emergency Management 2006). Discussed in Chapter 16, the contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Based on the low probability of a tsunami occurring during construction and the emergency plans currently in place to manage a tsunami should one occur, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not be subject to inundation by seiche, tsunami, or mudflow. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 4 (Project) would not be subject to inundation by seiche, tsunami, or mudflow. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

11.4.6.3 Impact Summary – Alternative 4

Impacts on hydrology, water quality (fresh water), and public health for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 11-22. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 11-26. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 11-26 Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HYD-1. Would Alternative 4 (Project) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving waterbody?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-26 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HYD-2. Would Alternative 4 (Project) adversely change the level, rate, or direction of flow of groundwater?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact HYD-3. Would Alternative 4 (Project) result in an increased level of groundwater contamination or affect the fate and transport of existing groundwater contamination (including that from direct percolation, injection, or salt water intrusion)?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-26 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-4. Would Alternative 4 (Project) cause regulatory water quality standards at an existing production well to be violated, as defined in the California Code of Regulations (CCR), Title 22, Division 4, and Chapter 15 and in the Safe Drinking Water Act?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-5. Would Alternative 4 (Project) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 11-26 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact HYD-7. Would Alternative 4 (Project) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact HYD-11. Would Alternative 4 (Project) be subject to inundation by seiche, tsunami, or mudflow?				
Shaft Site				
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

11.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an EIR must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

11.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for the conveyance system; expansion of the SJCWRP; WRP effluent management at the SJCWRP, POWRP, LCWRP, LBWRP, and WNWRP; and JWPCP solids processing for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994). Because process optimization would not occur, impacts from process optimization associated with Impact HYD-11 in the Alternative 1 (Program) analysis would have no impact under Alternative 5 (Program).

As stated in Section 3.3.1.2, process optimization consists of modifications within the existing WRPs to ensure that the Sanitation Districts continue to consistently meet permit conditions in anticipation of increasing regulatory requirements. Essentially, process optimization consists of constructing large wastewater influent or primary-treated effluent storage tanks at each facility. In the absence of this work, and in consideration of future growth in demand for wastewater treatment associated with increases in the population served by treatment plant facilities, absence of process optimization would diminish facility capability to: (1) meet current NPDES permit requirements; (2) meet potential future, more stringent NPDES permit requirements; and/or (3) meet the needs of recycled water users. None of these outcomes is reasonably certain to occur. With regard to outcome (1), all facilities are currently compliant with their NPDES permit requirements and have few recent permit violations related to effluent discharge. Thus the potential for outcome (1) is not imminent, though it can be forecast in the context of future growth scenarios. With regard to outcome (2), such requirements have not yet been formulated, so it is speculative to conclude that facilities might not be compliant. With regard to outcome (3), the outcome is speculative because it would not occur under current usage conditions, but would only occur in the event of a change in the volume and distribution of recycled water. Thus no impacts to any of the thresholds would foreseeably occur with implementation of Alternative 5 (Program).

11.4.7.2 Project

Alternative 5 does not include a project component; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for an emergency discharge of secondary effluent into the Wilmington Drain, as described in Section 3.4.1.5. Discharges into the Wilmington Drain would flow into Machado Lake (also known as Harbor Lake). As described in Section 11.2.3.2, the Wilmington Drain is a flood control structure that directs flows through the riparian woodland of Machado Lake in Ken Malloy Harbor Regional Park and ultimately discharges into the Los Angeles Harbor. The release of secondary effluent would be considered a violation of the JWPCP's NPDES permit and the Clean Water Act, and, therefore, would likely affect the beneficial uses of the Wilmington Drain, Machado Lake, the Ken Malloy Regional Park, and the Los Angeles Harbor. In addition, discharges into the Wilmington Drain would likely result in violations of Los Angeles Harbor Bacteria Total TMDL, Machado Lake Nutrients TMDL, and the Los Angeles Countywide MS4 Permit.

The Wilmington Drain has the capacity to handle a discharge from the JWPCP during normal flow or dry-weather flow events. However, during a storm event, the combined stormflow and discharge from the JWPCP could exceed the capacity of the Wilmington Drain. If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the JWPCP could overflow and untreated wastewater

could enter various water courses. Untreated wastewater overflowing out of the sewers would likely enter the adjacent stormdrains tributary to the Dominguez Channel and the Los Angeles River. Both the Dominguez Channel and the Los Angeles River discharge into the Los Angeles Harbor. The Dominguez Channel and the Los Angeles River are both fully-lined concrete channels and would not sustain any significant erosion or siltation; therefore, no impacts would occur to their existing drainage patterns.

However, a sewer overflow of untreated wastewater would be considered a violation of the JWPCP's NPDES permit and could affect the beneficial uses of the Dominguez Channel and the Los Angeles River. An overflow would likely result in similar violations of the NPDES permits and TMDLs as for the Wilmington Drain, with the exception of the Machado Lake Nutrients TMDL because none of the water courses would flow through Machado Lake. It would also likely result in violations of the Dominguez Channel, and the Greater Los Angeles and Long Beach harbors Toxic Pollutants TMDL. Additionally, sewer overflow that is not captured by stormdrains could result in intrusion and contamination of the groundwater and local fresh water productions wells.

Exceeding the capacity of the Wilmington Drain could also result in mudslides, ground failure, and unstable earth conditions in the unlined portions of the Wilmington Drain and possibly around Machado Lake; therefore, it could substantially alter the existing drainage pattern of the Wilmington Drain resulting in substantial erosion or siltation. An increase in sedimentation, as a result of emergency discharge, could have offsite water quality impacts and other issues. Similar impacts could also occur in the various low-lying areas along the JOS as a result of uncaptured secondary effluent causing soil instability and erosion.

It is unlikely that an emergency discharge into the Wilmington Drain or a sewer overflow would be captured and treated subsequently. Therefore, the impact to water quality, drainage patterns, and beneficial uses of various water courses such as the Wilmington Drain, Los Angeles River, and Dominguez Channel would be significant and unavoidable. There is no feasible mitigation that would reduce this impact.

11.4.7.3 Impact Summary – Alternative 5

Impacts on hydrology, water quality (fresh water), and public health for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 11-22, excluding process optimization. Note that the mitigation measures for Alternatives 1 through 4 (Program) are not applicable to Alternative 5 (Program). Significant impacts for Alternative 5 (Project) are summarized in Table 11-27.

Table 11-27. Impact Summary – Alternative 5 (Project)

Project Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact HYD-1. Would Alternative 5 (Project) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving waterbody?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact HYD-5. Would Alternative 5 (Project) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact HYD-7. Would Alternative 5 (Project) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation

11.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.6 and 11.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

11.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

11.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

11.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Significant hydrology, water quality (fresh water), and public health project impacts would be the same as summarized in Table 11-27 for Alternative 5 (Project).

11.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on hydrology, water quality (fresh water), and public health resulting from the construction and/or operation of program and/or project elements is provided in Table 11-28. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 11-28. Comparison of Significant Impacts and Mitigation for Hydrology, Water Quality (Fresh Water), and Public Health for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternatives 1, 2, 3, 4, and 5[a] (Program)			
Impact HYD-11. Would Alternatives 1, 2, 3, 4, and 5 (Program) be subject to inundation by seiche, tsunami, or mudflow?			
POWRP – Process Optimization	CEQA Significant Impact During Construction	MM HYD-11. During the final design process, perform a geotechnical investigation. If it is determined that there is a potential for mudflow during construction of process optimization at the Pomona Water Reclamation Plant due to risks associated with severe weather or the combination of severe weather and post-burn conditions on Elephant Hill, a construction safety plan will be developed prior to construction activities and will include procedures to avoid risks to workers during the construction period. Procedures could include sandbagging and reseeding the burned area immediately following a fire to reestablish vegetation to buffer rainfall and promote a root system to help secure soil in place. Additionally, weather patterns will be monitored and construction will cease if weather could contribute to mudflow conditions.	CEQA Less Than Significant Impact During Construction
[a] Process optimization would not apply to Alternative 5 (Program). Additionally, all mitigation measures and residual impacts would not apply to Alternative 5 (Program).			

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternatives 5 (Project)			
Impact HYD-1. Would Alternative 5 (Project) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving waterbody?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact HYD-5. Would Alternative 5 (Project) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact HYD-7. Would Alternative 5 (Project) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation

Table 11-28 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternatives 6 (Project)			
Impact HYD-1. Would Alternative 6 (Project) create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or Water Quality Control Plan for the receiving waterbody?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact HYD-5. Would Alternative 6 (Project) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact HYD-7. Would Alternative 6 (Project) create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation

Chapter 12
LAND USE AND PLANNING

12.1 Introduction

This chapter describes the existing environmental and regulatory settings for land use and planning, analyzes the potential impacts on land use and planning that would result from the implementation of the program elements and project elements, and determines the significance of those impacts.

Land use and planning issues refer to the compatibility of the physical land uses of a project with adjacent or surrounding land uses, as well as a project's consistency with plans and policies that have regulatory jurisdiction over the project. This chapter describes the program and project elements' compliance with land use plans, policies, and regulations. For information and analysis regarding the California State Ocean Plan, refer to Chapter 13.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the land use and planning impact analysis for each program element is summarized by alternative in Table 12-1.

Table 12-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	-
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	C,O
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 12-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	C,O
Biosolids Management	X	X	X	X	X	N/A	O	O
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 12-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 12.4.7 for a discussion of the No-Project Alternative.
[b] See Section 12.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the land use and planning impact analysis for each project element is summarized by alternative in Table 12-2.

Table 12-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	C,O
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	C,O
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	C,O
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	C,O
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	C,O
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	C,O
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	C,O	C,O
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C,O
JWPCP West			X	X	N/A	N/A	C,O	C,O
TraPac	X	X			N/A	N/A	C,O	C,O
LAXT	X	X			N/A	N/A	C,O	C,O
Southwest Marine	X	X			N/A	N/A	C,O	C,O
Angels Gate			X		N/A	N/A	C,O	C,O
Royal Palms				X	N/A	N/A	C,O	C,O

Table 12-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Riser/Diffuser Areas								
SP Shelf[c]	X				N/A	N/A	C,O	C,O
PV Shelf[c]		X	X		N/A	N/A	C,O	C,O
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	C,O

[a] See Section 12.4.7 for a discussion of the No-Project Alternative.
[b] See Section 12.4.8 for a discussion of the No-Federal-Action Alternative.
[c] Land use impacts associated with the Pasha Terminal and Fish Harbor, which would be utilized in connection with construction on the SP Shelf and PV Shelf, are analyzed in this chapter under the SP and PV Shelves.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

12.2 Environmental Setting

12.2.1 Regional/Program Setting

The program elements and project elements are sited within the Joint Outfall System (JOS) service area, which is located in the southern portion of Los Angeles County. In 2000, approximately 7.5 percent of the JOS was designated as vacant, and approximately 5 percent was designated as open space (SCAG 2000). Developed land uses in the area are predominantly single-family residential (45 percent) and multi-family residential (9 percent) (SCAG 2000). Industrial and commercial uses account for 10 percent and 8 percent of the development in the JOS, respectively. The remaining areas comprise miscellaneous land uses.

Regional planning documents indicate population growth will vary greatly among the coastal and inland regions of the JOS service area (LACDRP 2008). For example, the coastal areas are expected to have a much slower population growth and, therefore, less new development compared to the inland areas (LACDRP 2008). Housing is generally expected to increase in numbers and in density (LACDRP 2008). The Southern California Association of Governments (SCAG) projects population in the JOS service area would increase from 5.1 million in 2008 to approximately 6.3 million by 2050.

Biosolids Management

Biosolids generated within the JOS service area are managed on a regional basis by the Sanitation Districts of Los Angeles County (Sanitation Districts). While the biosolids are processed and generated at the JWPCP, located in the city of Carson, they are transported and used throughout the states of California and Arizona. A summary of the existing facilities, the management practices, and the locations are summarized in Table 12-3.

Table 12-3. Existing Biosolids Management Locations

Facility	Management Practice	Location
San Joaquin Composting Facility	Composting	Kern County, CA
South Kern Industrial Center	Composting	Kern County, CA
Inland Empire Regional Composting Facility	Composting	Rancho Cucamonga, CA
Honey Bucket Farms	Land Application With Lime Stabilization	Kern County, CA
Desert Ridge Farms	Land Application	Yuma County, AZ
Rialto Slurrycarb Facility (EnerTech)	Renewable Fuel	Rialto, CA
Mitsubishi Cement Corp	Injection for NO_X Control	San Bernardino, CA
Puente Hills Landfill	Landfill Co-disposal	Los Angeles, CA

Typically, these facilities are located in agricultural areas, surrounded by agricultural land uses, or in existing industrial parks, surrounded by other industrial uses.

Conveyance System

As shown in Chapter 3, Table 3-5, approximately 33 miles of joint outfall sewer lines would require some type of relief (i.e., replacement of current pipes with larger diameter pipes or the addition of parallel pipes). The majority of the JOS wastewater conveyance system is located within the public right-of-way of existing streets that are under the jurisdiction of either the county of Los Angeles, a local city, or, in some cases, the California Department of Transportation. The Sanitation Districts must obtain permits from these jurisdictions to construct maintain, repair, or upgrade the conveyance system. In areas where the conveyance system is located outside of the public right-of-way, the Sanitation Districts are typically required to secure property easements.

San Jose Creek Water Reclamation Plant

The San Jose Creek Water Reclamation Plant (SJCWRP) is located in unincorporated Los Angeles County near the city of Whittier. It is within the jurisdiction of the Los Angeles County General Plan. The land use designation of the SJCWRP is industrial and residential, and the zoning is residential and agriculture (LACDRP 2008; Los Angeles County 2010). The general plan land use designations and zoning for the SJCWRP and the surrounding area are identified on Figure 12-1.

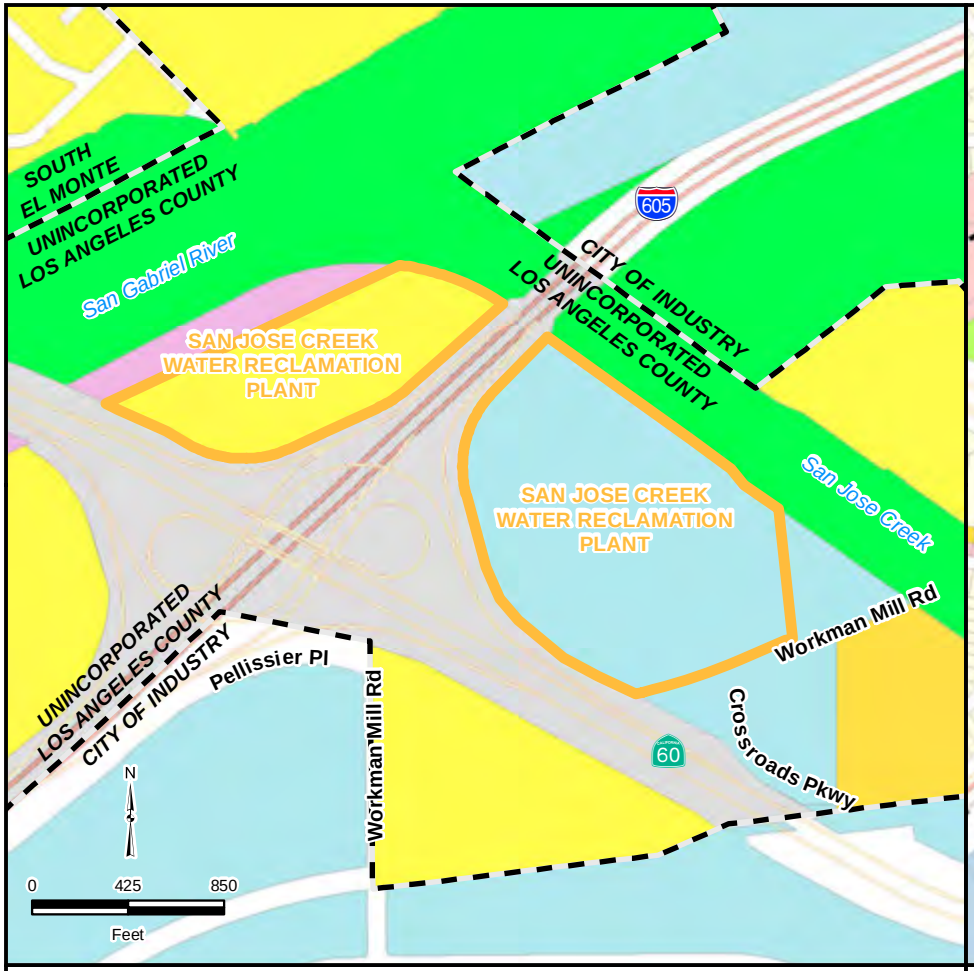
The overall site is bound by San Jose Creek to the north, State Route 60 to the south, Workman Mill Road to the east, and the San Gabriel River to the west (see Figure 2-4). Interstate (I-) 605 divides the SJCWRP into two sites: SJCWRP East and SJCWRP West. The surrounding land uses are primarily developed with industrial and commercial uses, with the exception of the golf course to the north of the SJCWRP.

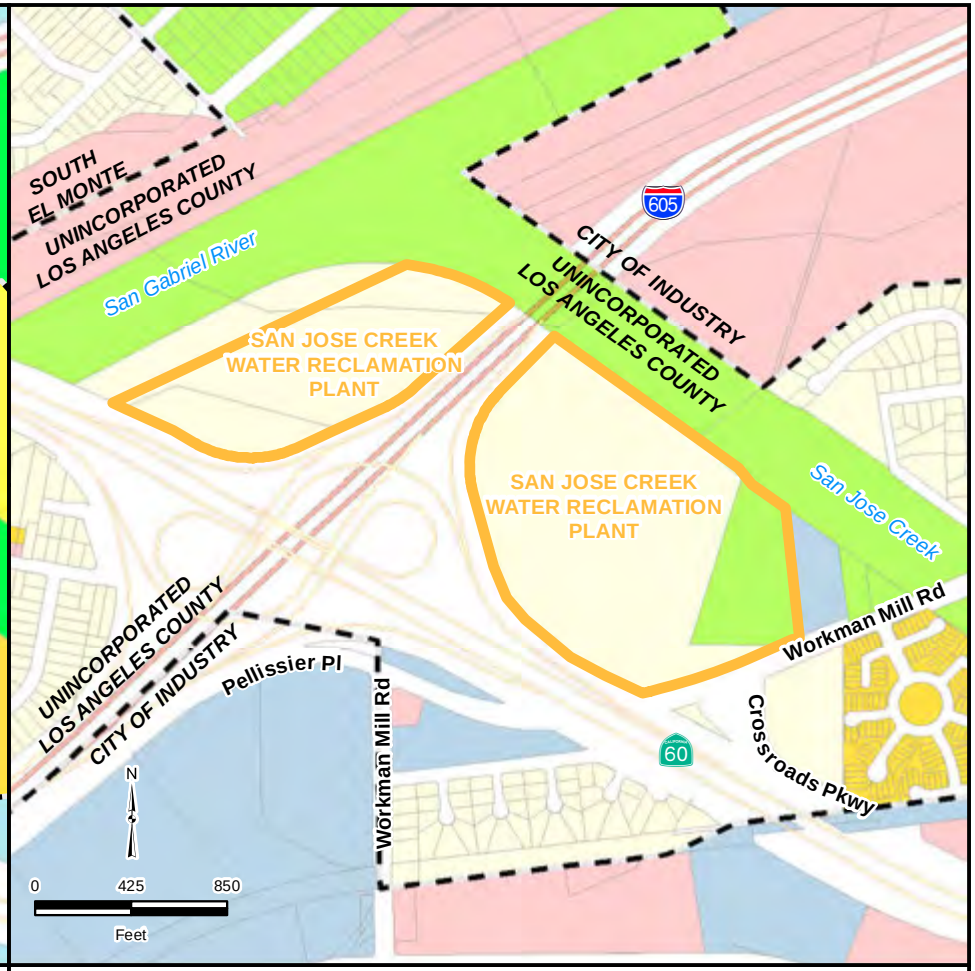
Pomona Water Reclamation Plant

The Pomona Water Reclamation Plant (POWRP) is located in the city of Pomona and is within the jurisdiction of the City of Pomona General Plan. The land use designation of the POWRP is institutional and the zoning is open space (Sanchez pers. comm.). The general plan land use designations and zoning for the POWRP and the surrounding area are identified on Figure 12-2. The POWRP is bound by a railroad right-of-way and industrial uses to the north, the Humane Society and Humane Way to the east, and Elephant Hill to the south and west (see Figure 2-5). All surrounding land is primarily developed with industrial and manufacturing uses, with the exception of Elephant Hill, which is open space.

Los Coyotes Water Reclamation Plant

The Los Coyotes Water Reclamation Plant (LCWRP) is located in the city of Cerritos and is within the jurisdiction of the City of Cerritos General Plan. The land use designation of the LCWRP is utility and





GENERAL PLAN LAND USE

- Low Density Residential (1 to 6 dwelling unit/acre - du/ac)
- Medium Density Residential (12 to 22 du/ac)
- Industrial
- Public and Semi-Public Facilities
- Open Space
- Transportation Corridor

ZONING

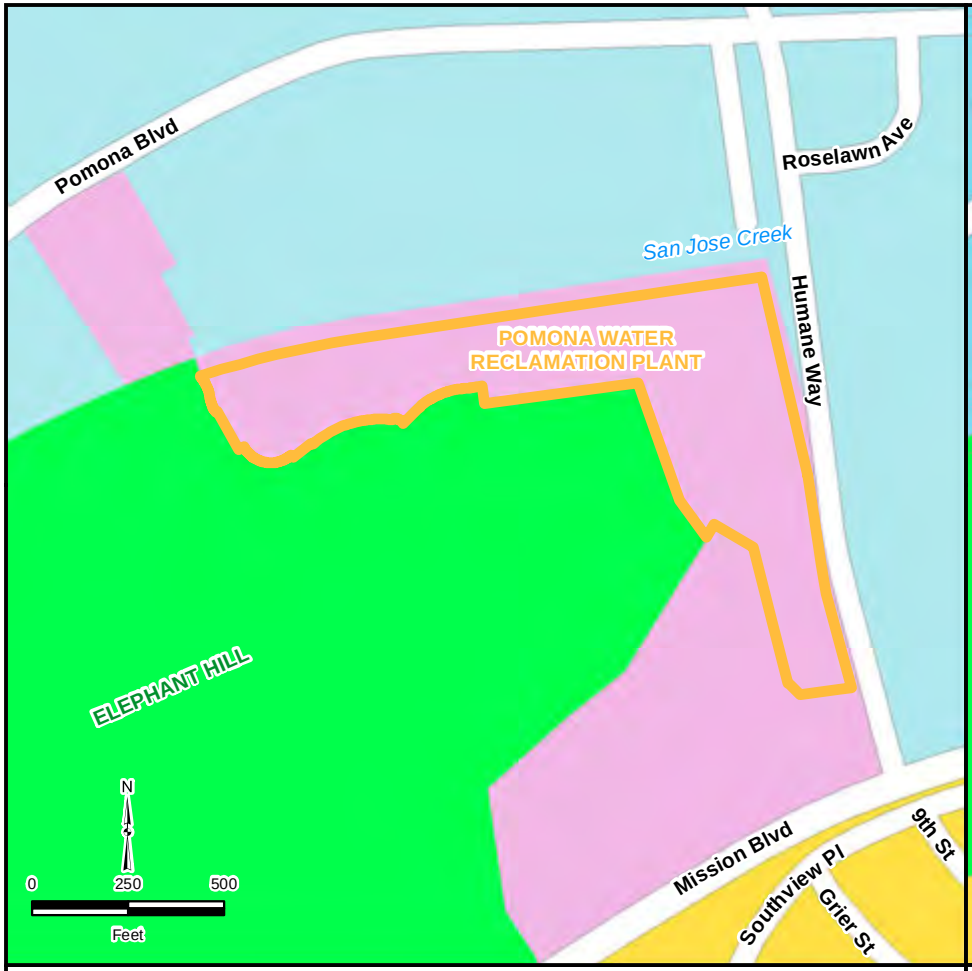
- Residential (Single-Family, Residential Agriculture)
- Limited Multiple Residence
- Agriculture
- Light Manufacturing
- Heavy Manufacturing
- Commercial (Restricted Business, Neighborhood, Recreation, Manufacturing)

FIGURE 12-1

CLEARWATER Program

San Jose Creek Water Reclamation Plant
General Plan Land Use and Zoning

Source: Sanitation Districts of Los Angeles County 2011, City of Industry 2010, City of South El Monte 2010, County of Los Angeles, ESRI 2011



GENERAL PLAN LAND USE

- Medium Density Residential (12 to 22 dwelling unit/acre - du/ac)
- Industrial
- Institutional
- Open Space

ZONING

- Single-Family Residence
- Residential Planned Development
- Light Manufacturing
- Heavy Manufacturing
- Open Space

FIGURE 12-2

CLEARWATER Program

Pomona Water Reclamation Plant
General Plan Land Use and Zoning

Source: Sanitation Districts of Los Angeles County 2011, City of Pomona 2010, ESRI 2011

flood control, and the zoning is open space (City of Cerritos 2004; Munoz pers. comm.). The general plan land use designations and zoning for the LCWRP and the surrounding area are identified on Figure 12-3. The treatment facilities occupy the southern portion of the existing location (see Figure 2-6). The remaining 20 acres of Sanitation Districts' owned property are occupied by the Iron Wood Nine Golf Course. All surrounding land is primarily developed with industrial and commercial uses. The San Gabriel River acts as a buffer between the LCWRP and Caruthers Park and residential land uses to the west, and I-605 acts as buffer between the LCWRP and the residential land uses to the east.

Long Beach Water Reclamation Plant

The Long Beach Water Reclamation Plant (LBWRP) is located in the city of Long Beach and is within the jurisdiction of the Long Beach General Plan. The land use designation of the LBWRP is open space, and the zoning is open space (City of Long Beach 1998; City of Long Beach 2002). The general plan land use designations and zoning for the LBWRP and the surrounding area are identified on Figure 12-4. The LBWRP is bound by Willow Street to the north, the Coyote Creek to the south and east, and the San Gabriel River to the west (see Figure 2-7). Surrounding land uses primarily are parks and open space, including El Dorado Park to the north; El Dorado Park Golf Course to the west; and residential areas to the south and east. The Water Replenishment District's Leo J. Vander Lans Advanced Water Treatment Facility is also located to the north of the LBWRP.

Whittier Narrows Water Reclamation Plant

The Whittier Narrows Water Reclamation Plant (WNWRP) is located in the county of Los Angeles and is within the jurisdiction of the Los Angeles County General Plan. The land use designation of the WNWRP is open space, and the zoning is open space. The general plan land use designations and zoning for the WNWRP and the surrounding area are identified on Figure 12-5. The WNWRP surroundings are primarily recreational open space uses, including the Whittier Narrows Recreation Area to the north, undeveloped industrial areas to the south, Legg Lake and nurseries to the east, and largely unused utility areas to the west (see Figure 2-8). The Rio Hondo River transects through the northwest corner of the site.

Joint Water Pollution Control Plant

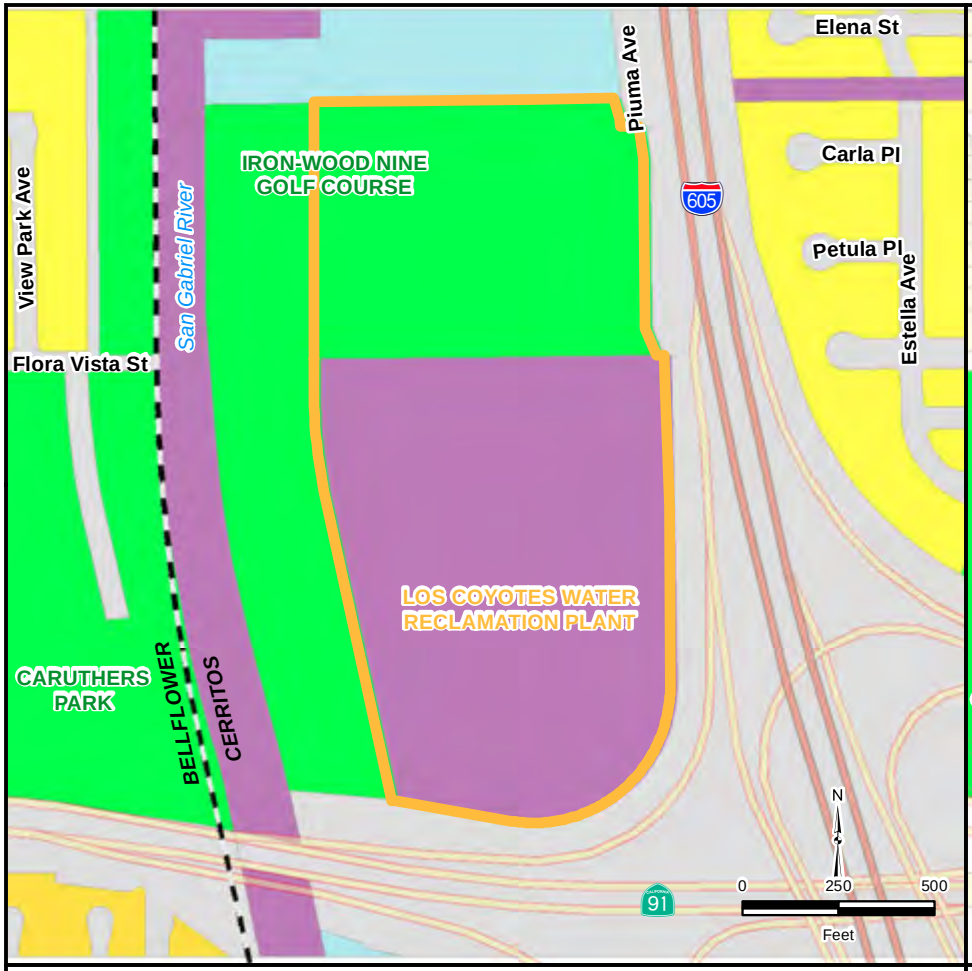
The JWPCP is located in the city of Carson and is within the jurisdiction of the City of Carson General Plan. The land use designation of the JWPCP is industrial, and the zoning is heavy manufacturing (City of Carson 2008; City of Carson 2006). The general plan land use designations and zoning for the JWPCP and the surrounding area are identified on Figures 12-6 and 12-7. It is generally bordered by West Sepulveda Boulevard to the north, Main Street to the east, West Lomita Boulevard to the south, and I-110 to the west (see Figure 2-10). The Sanitation Districts lease land to the north of West Sepulveda Boulevard to landscaping and nursery businesses, to the east of Main Street to the Home Depot Retail Center, and to the south of West Lomita Boulevard to the Wilmington Jaycee Foundation for the Wilmington Athletic Complex and to the Wilmington Boys and Girls Club. The surrounding land uses outside of the JWPCP property boundaries are fully developed with commercial and retail to the east of Main Street, and residential uses to the south of West Lomita Boulevard.

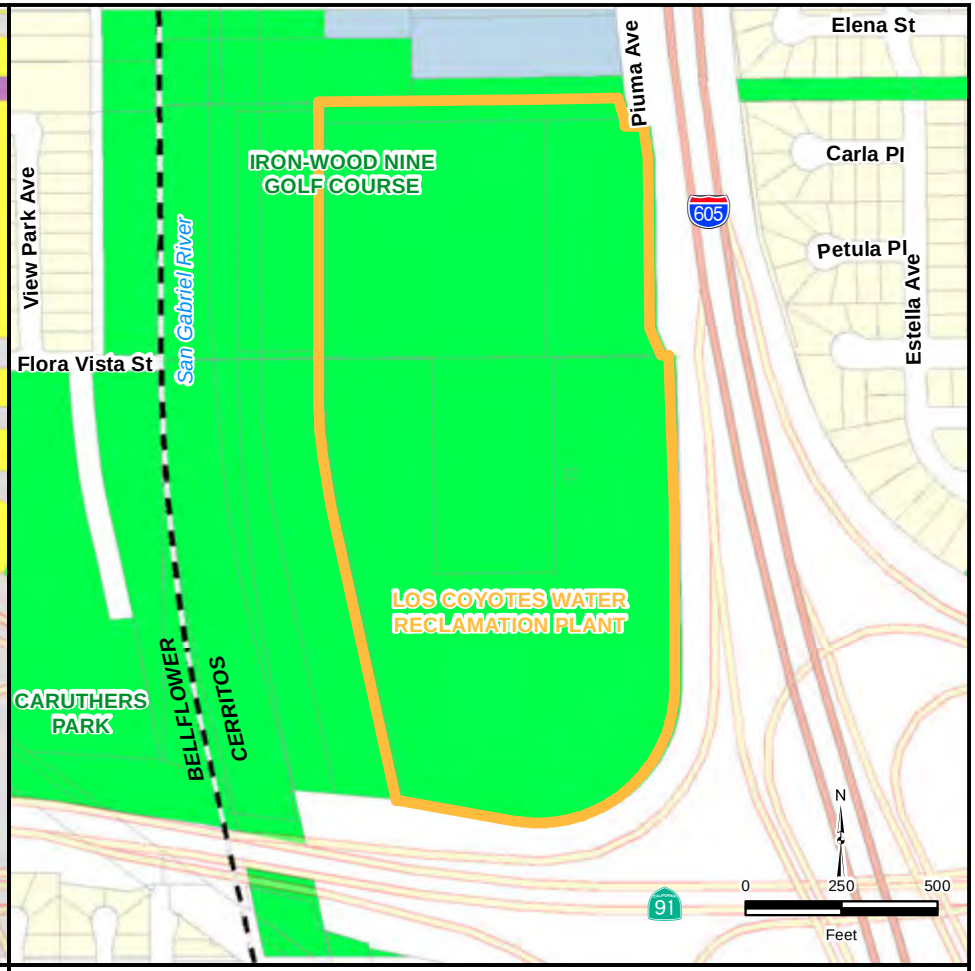
12.2.2 Project Setting

12.2.2.1 Tunnel Alignment

Wilmington to San Pedro Shelf Alignment

The onshore portion of the Wilmington to San Pedro Shelf (SP Shelf) tunnel alignment would begin at the JWPCP East shaft site and follow Wilmington Boulevard south to Harry Bridges Boulevard, all within the public right-of-way (see Figure 3-12). The tunnel alignment would be adjusted to avoid the gas





GENERAL PLAN LAND USE

- Low Density Residential (1 to 6 dwelling units/acre - du/ac)
- Medium Density Residential (12 to 22 du/ac)
- Industrial
- Open Space
- Utility and Flood Control
- Transportation Corridor

ZONING

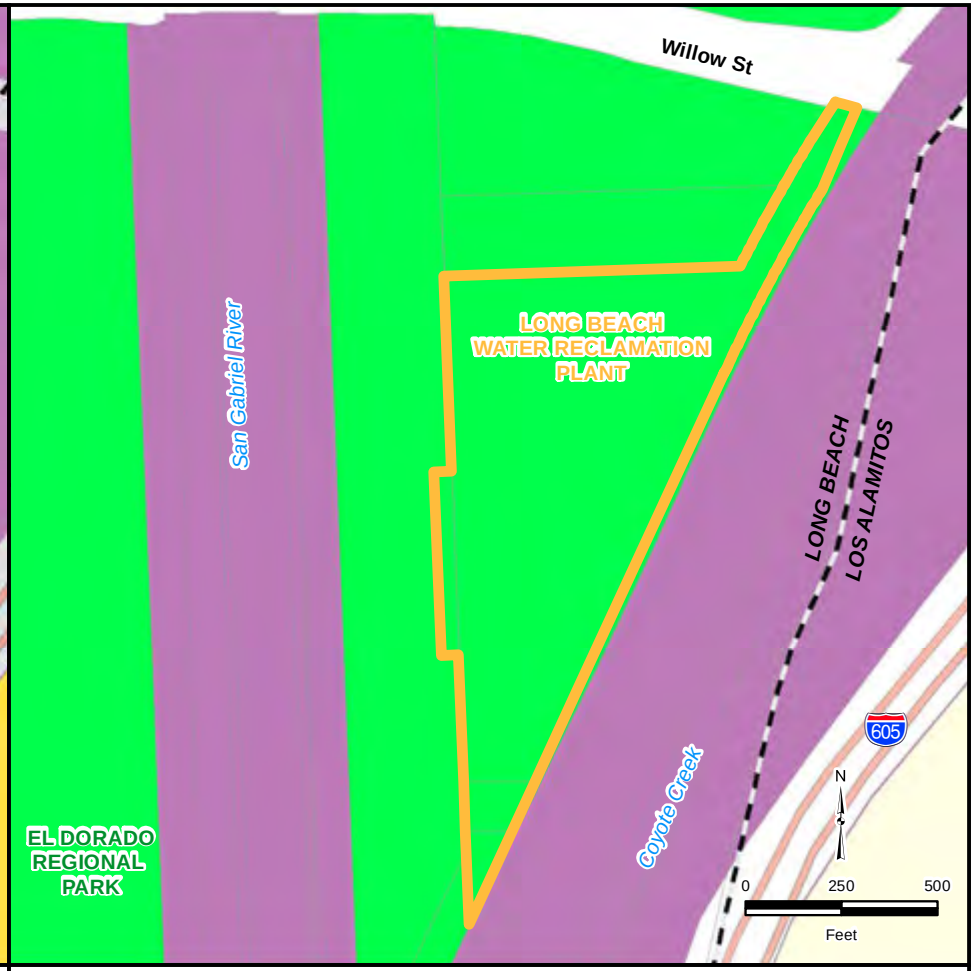
- Single-Family Residence
- Light Manufacturing
- Open Space

FIGURE 12-3

CLEARWATER Program

Los Coyotes Water Reclamation Plant General Plan Land Use and Zoning

Source: Sanitation Districts of Los Angeles County 2011, City of Bellflower 2010, City of Cerritos 2010, ESRI 2011



GENERAL PLAN LAND USE

- Medium Density Residential (12 to 22 dwelling units/acre - du/ac)
- Open Space
- Flood Control
- Transportation Corridor

ZONING

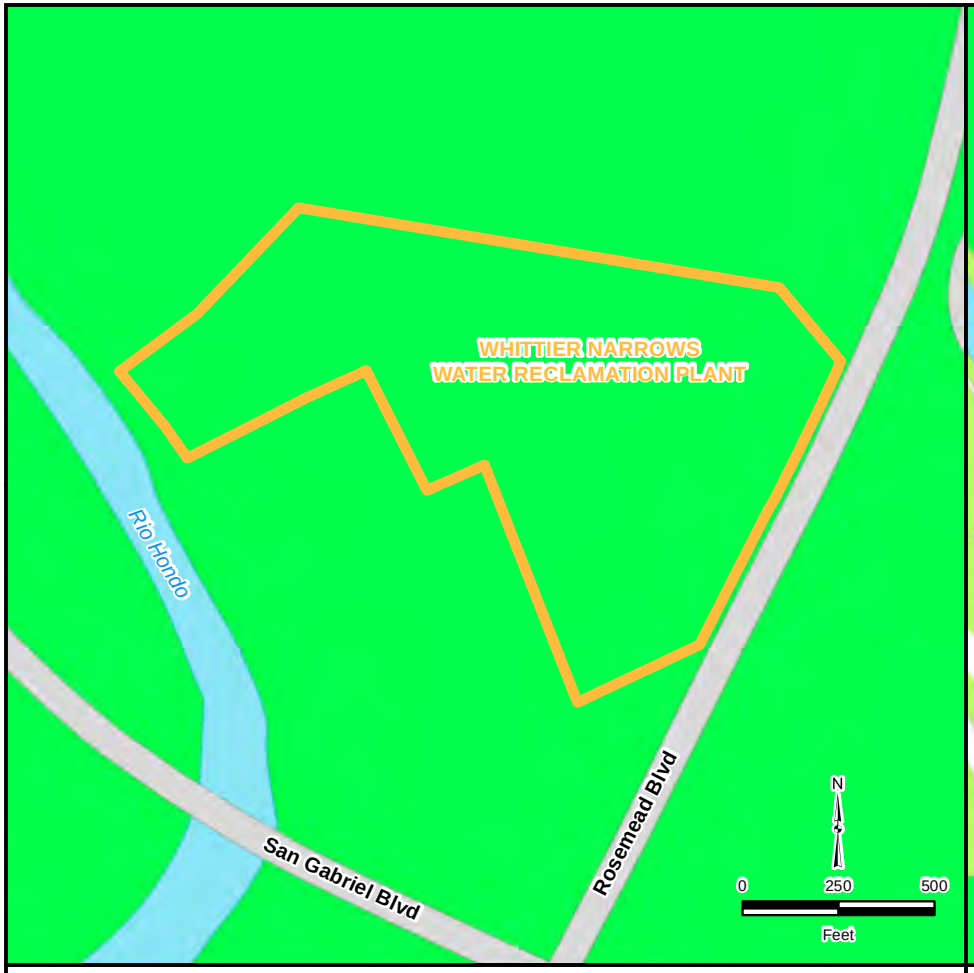
- Single-Family Residence
- Open Space
- Public Right-of-Way (Flood Control)

FIGURE 12-4

CLEARWATER Program

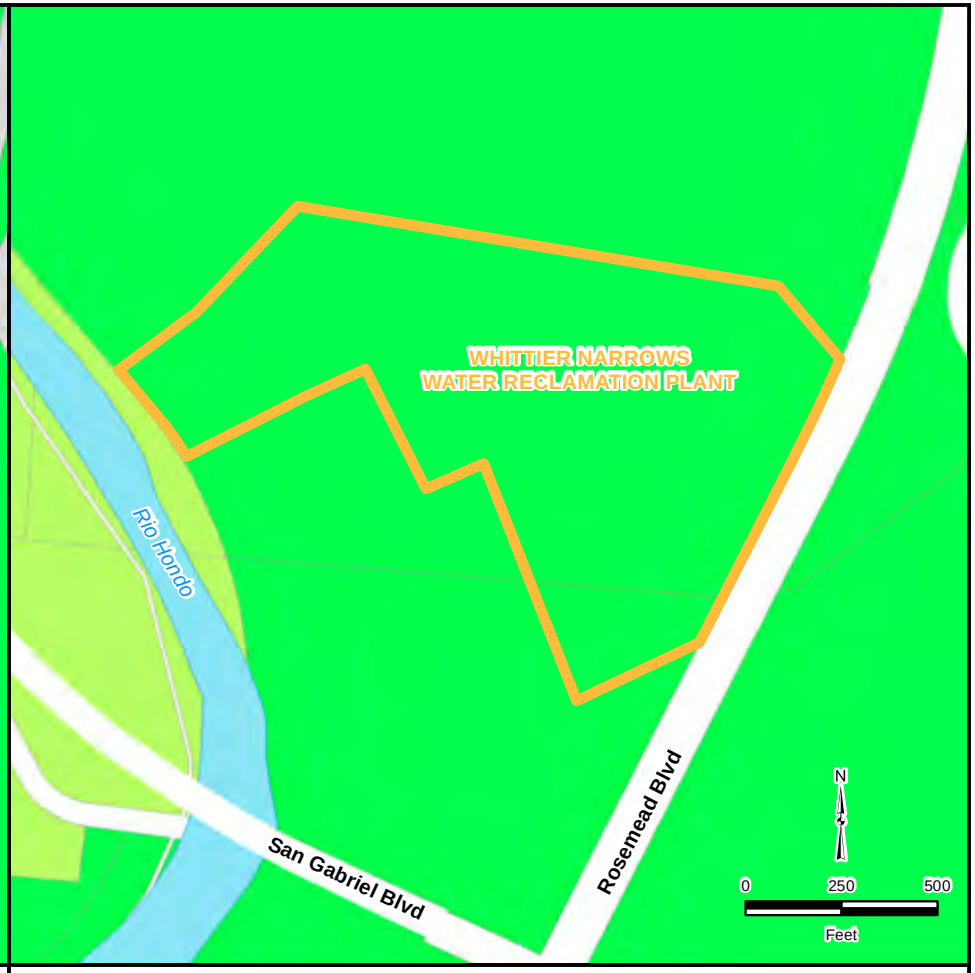
Long Beach Water Reclamation Plant General Plan Land Use and Zoning

Source: Sanitation Districts of Los Angeles County 2011, City of Long Beach 2010, City of Los Alamitos 2010, ESRI 2011



GENERAL PLAN LAND USE

- Open Space
- Transportation Corridor



ZONING

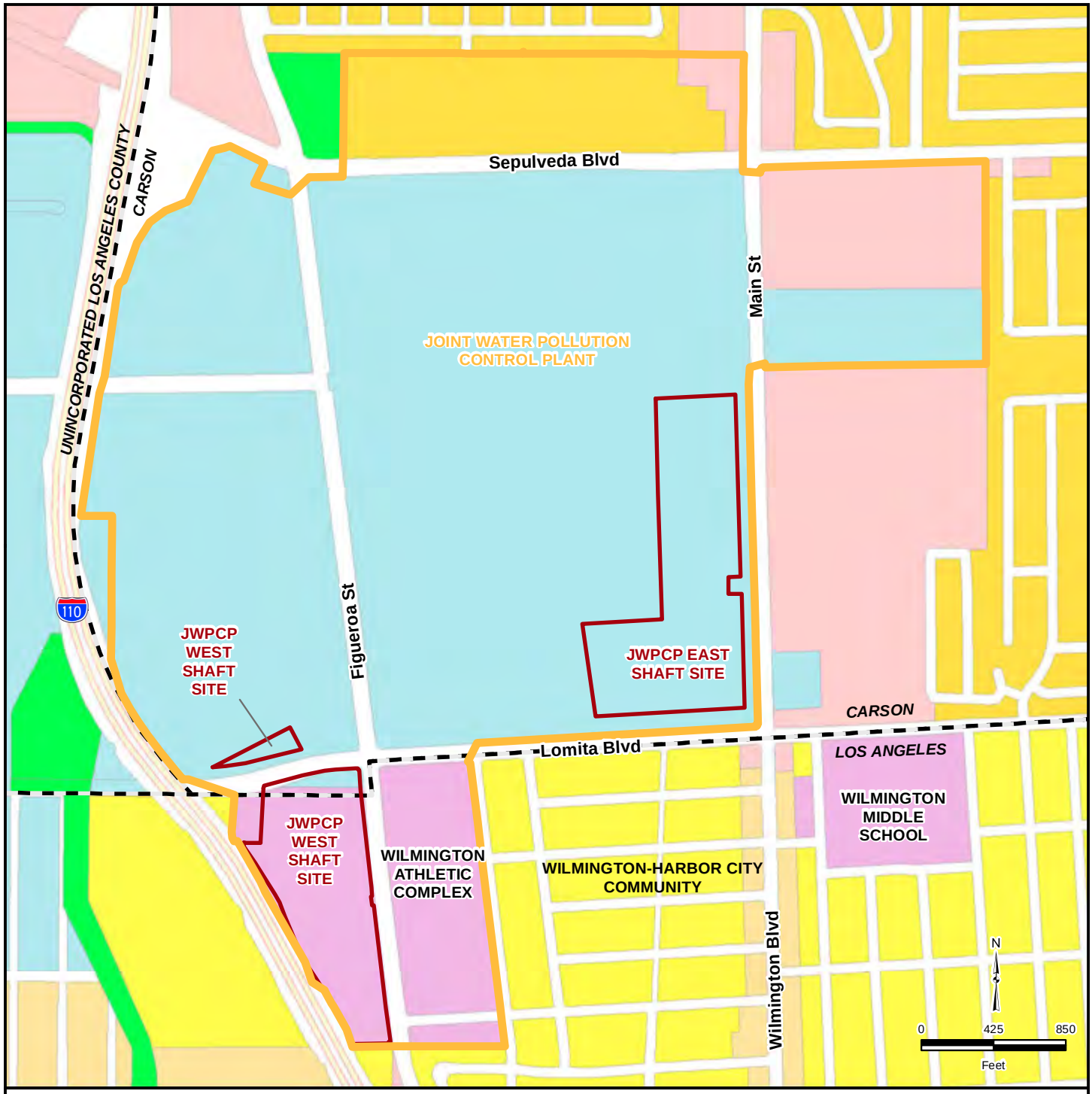
- Light Agriculture
- Open Space

FIGURE 12-5

CLEARWATER Program

Whittier Narrows Water Reclamation Plant
General Plan Land Use and Zoning

Source: Sanitation Districts of Los Angeles County 2011, County of Los Angeles 2011, ESRI 2011



GENERAL PLAN LAND USE

- Low Density Residential (1 to 6 dwelling unit/acre - du/ac)
- Low/Medium Density Residential (6 to 12 du/ac)
- Medium Density Residential (12 to 22 du/ac)
- Commercial (General, Major, Neighborhood, Business Park)
- Industrial (Light, Heavy, Major, Limited)
- Public and Semi-Public Facilities
- Open Space

FIGURE 12-6

CLEARWATER Program

Joint Water Pollution Control Plant General Plan Land Use

Source: Sanitation Districts of Los Angeles County 2011, Carson 2011, Los Angeles 2011, Los Angeles County 2011, ESRI 2011

ZONING

- Residential (Single-Family, Two Family, Residential Agriculture)
- Commercial (Restricted Business, Neighborhood, Unlimited)
- Light Manufacturing
- Public Facilities
- Specific Plan
- Heavy Manufacturing
- Open Space
- Mixed Use Development

FIGURE 12-7

CLEARWATER Program

Joint Water Pollution Control Plant Zoning

Source: Sanitation Districts of Los Angeles County 2011, Carson 2011, Los Angeles 2011, Los Angeles County 2011, ESRI 2011

station, a private parcel, on the corner of Lomita and Wilmington Boulevards. From Harry Bridges Boulevard, the onshore alignment would turn southeast to cross beneath the eastern end of the Trans Pacific Container Service Corporation (TraPac) container terminal, where an access shaft site would be constructed. The offshore portion of the Wilmington to SP Shelf tunnel alignment would begin at the TraPac shaft site, then continue southeast under the West Basin, Pier A, and the East Basin Channel in Los Angeles Harbor. The offshore alignment would then pass under Yusen terminal in the Port of Los Angeles and under the eastern end of the Vincent Thomas Bridge to the Los Angeles Export Terminal (LAXT) shaft site. From the LAXT shaft site, the offshore alignment would turn southwest, passing under Fish Harbor, to the Southwest Marine access shaft site. With a few exceptions, most of the land south of Harry Bridges Boulevard is within the Port of Los Angeles and is owned by the city of Los Angeles. The exceptions include some railroad-related parcels and possibly some private industrial properties. From the Southwest Marine access shaft site, the alignment would veer south and extend offshore to the SP Shelf.

The Wilmington to SP Shelf alignment would be tunneled approximately 100 to 200 feet below ground surface (bgs) through the city of Carson and the city of Los Angeles community of Wilmington-Harbor City. The following existing land uses are located along the route: commercial, residential, retail, industrial, and vacant land. The land use designations based on SCAG data along the route for both the city of Carson and city of Los Angeles generally include commercial and retail; schools; residential; vacant; industrial, manufacturing, and warehousing; public facilities, such as fire stations and government offices; harbor facilities; storage; railroads; petroleum and natural gas facilities; and religious facilities.

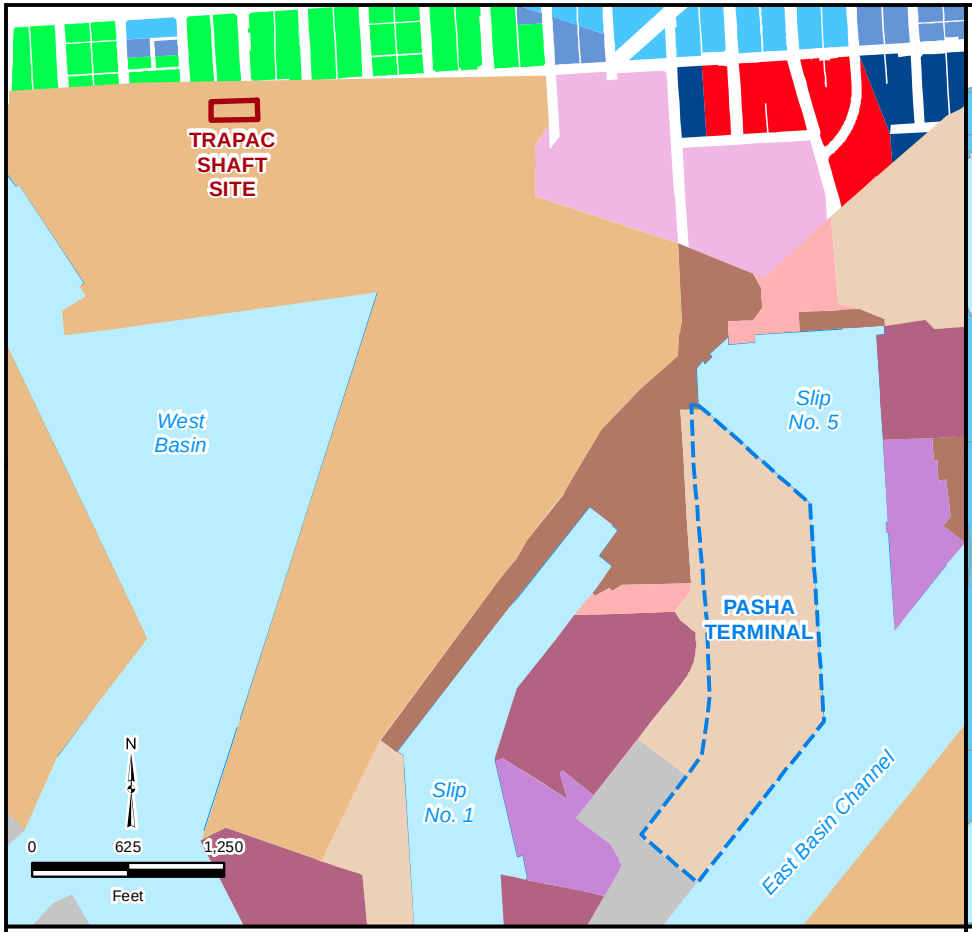
Wilmington to Palos Verdes Shelf Alignment

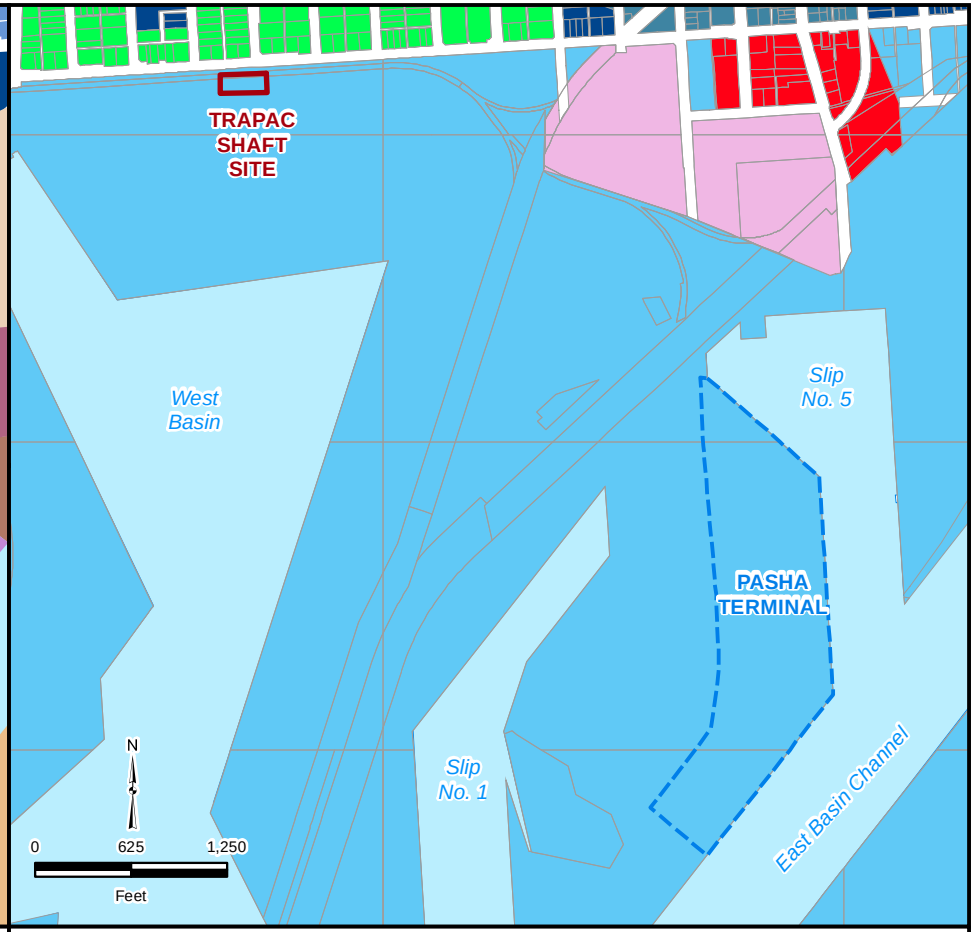
The Wilmington to Palos Verdes Shelf (PV Shelf) tunnel alignment is the same as described for the Wilmington to SP Shelf alignment except that, from the Southwest Marine access shaft site, the Wilmington to PV Shelf alignment would continue southwest and extend offshore to the PV Shelf at a depth of approximately 100 to 250 feet bgs or below the seafloor (see Figure 3-13). Therefore, the land use setting is also the same.

Figueroa/Gaffey to Palos Verdes Shelf Alignment

The onshore portion of the Figueroa/Gaffey to PV Shelf tunnel alignment would begin at the JWPCP West shaft site and follow Figueroa Street south to Harry Bridges Boulevard within the public right-of-way (see Figure 3-14). The alignment would then traverse underneath land owned by the city of Los Angeles, and follow John S. Gibson Boulevard. The onshore alignment would then leave John S. Gibson Boulevard and traverse I-110 right-of-way and private commercial properties, where it would join with Gaffey Street to the west near its intersection with Channel Street. The onshore alignment would turn south on Gaffey Street and stay within public right-of-way with a possible exception in the vicinity of the intersection with 25th Street, where it may traverse adjacent residential parcels. The onshore alignment would continue south on Gaffey Street in public right-of-way until veering southwest beneath city of Los Angeles-owned Angels Gate Park to the Angels Gate shaft site. From the Angels Gate shaft site, the offshore portion of the Figueroa/Gaffey to PV Shelf tunnel alignment would continue south crossing Pacific Avenue public right-of-way and city of Los Angeles-owned Point Fermin Park, and then extend offshore to the PV Shelf.

The Figueroa/Gaffey to PV Shelf alignment would be tunneled approximately 70 to 370 feet bgs through the city of Carson, the city of Los Angeles community of Wilmington-Harbor City, and the city of Los Angeles community of San Pedro. The following existing land uses are located along the route: commercial; residential; retail; schools; industrial, manufacturing, and warehousing; public facilities; railroads; petroleum and natural gas processing facilities; public facilities, such as fire stations and government offices; religious facilities; cemeteries; open space; and vacant land. The land use





GENERAL PLAN LAND USE

- Container
- Breakbulk
- Dry Bulk
- Liquid Bulk
- Maritime Support
- Institutional
- Vacant
- Community Commercial
- Light Manufacturing
- Heavy Manufacturing
- Limited Manufacturing
- Public and Semi-Public Facilities
- Open Space

ZONING

- Single-Family and Two-Family Residence
- Neighborhood Commercial
- Light Manufacturing
- Institutional
- Heavy Manufacturing
- Unclassified Manufacturing
- Open Space

FIGURE 12-8

CLEARWATER Program

TraPac Shaft Site and Pasha Terminal General Plan Land Use and Zoning

Source: Sanitation Districts of Los Angeles County 2011, Port of Los Angeles 2011, ZIMAS 2011

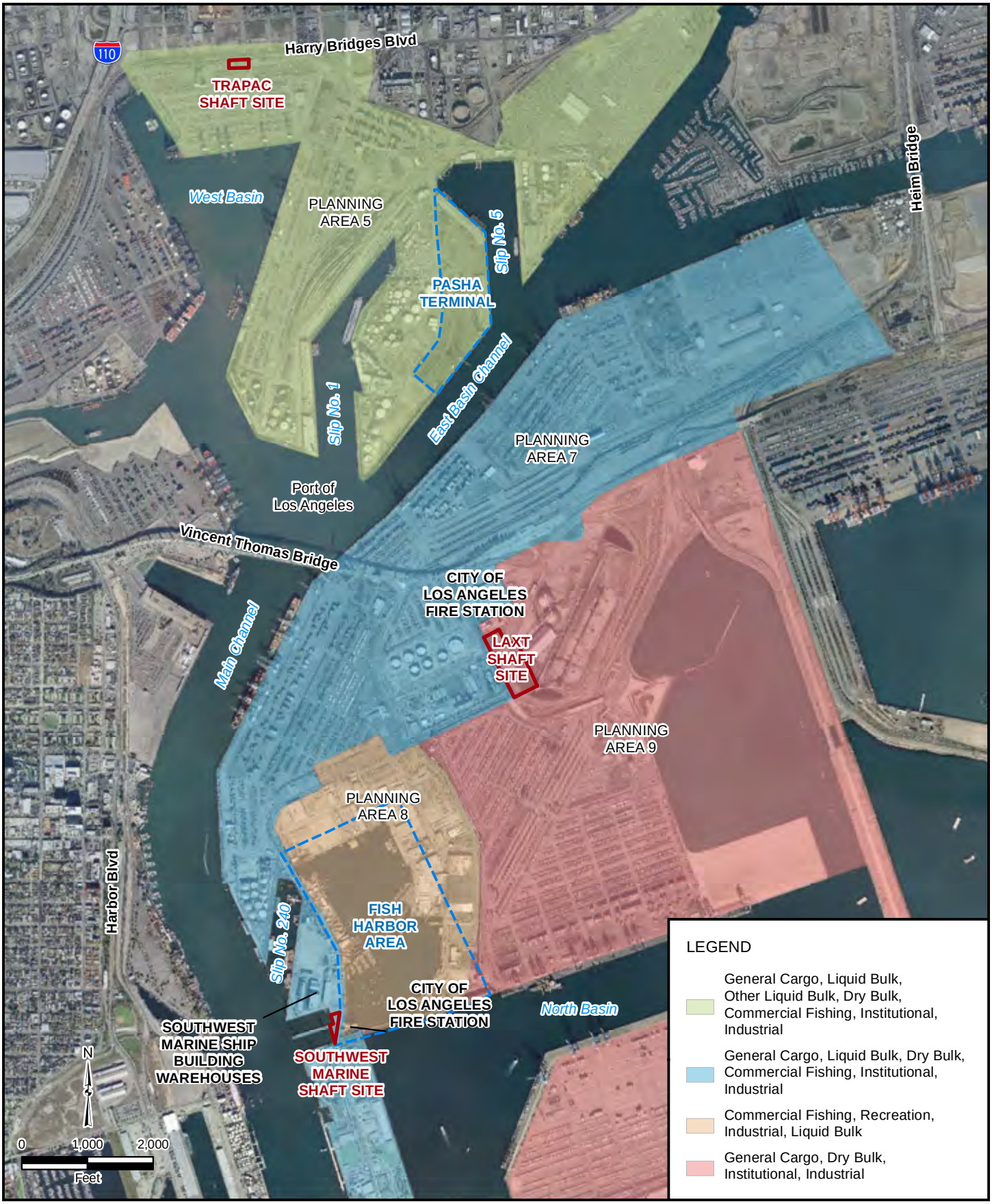
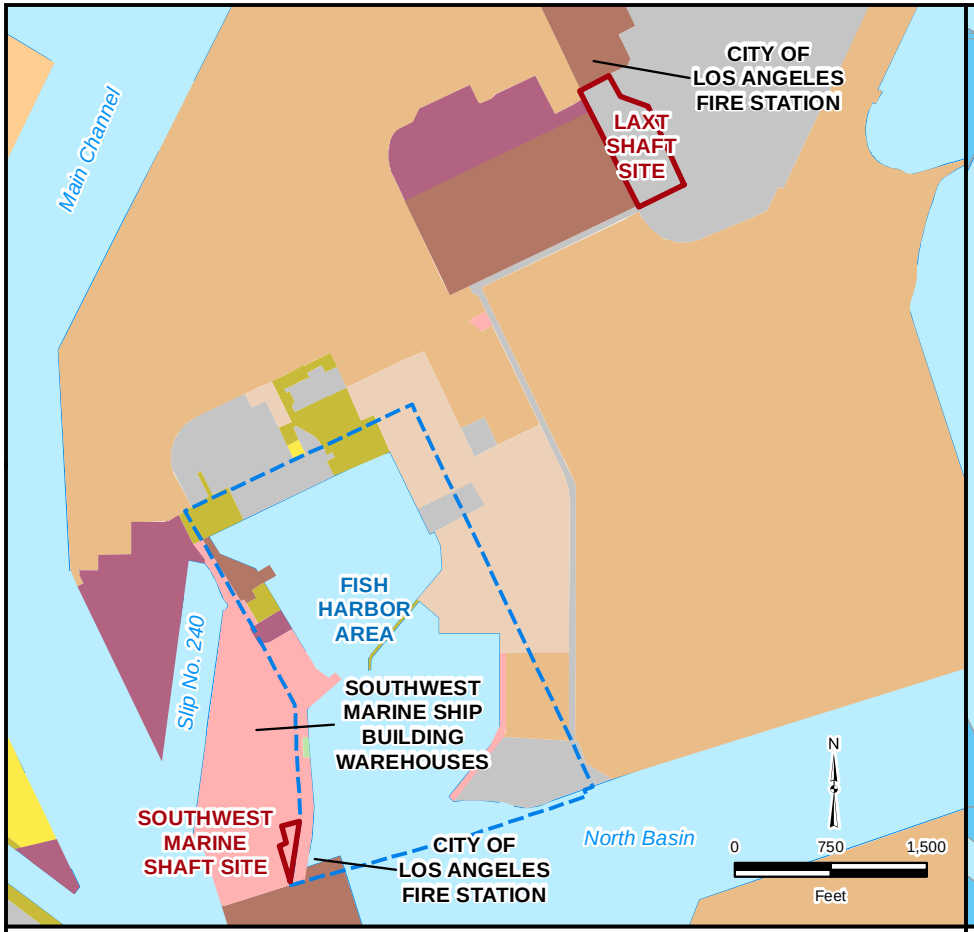


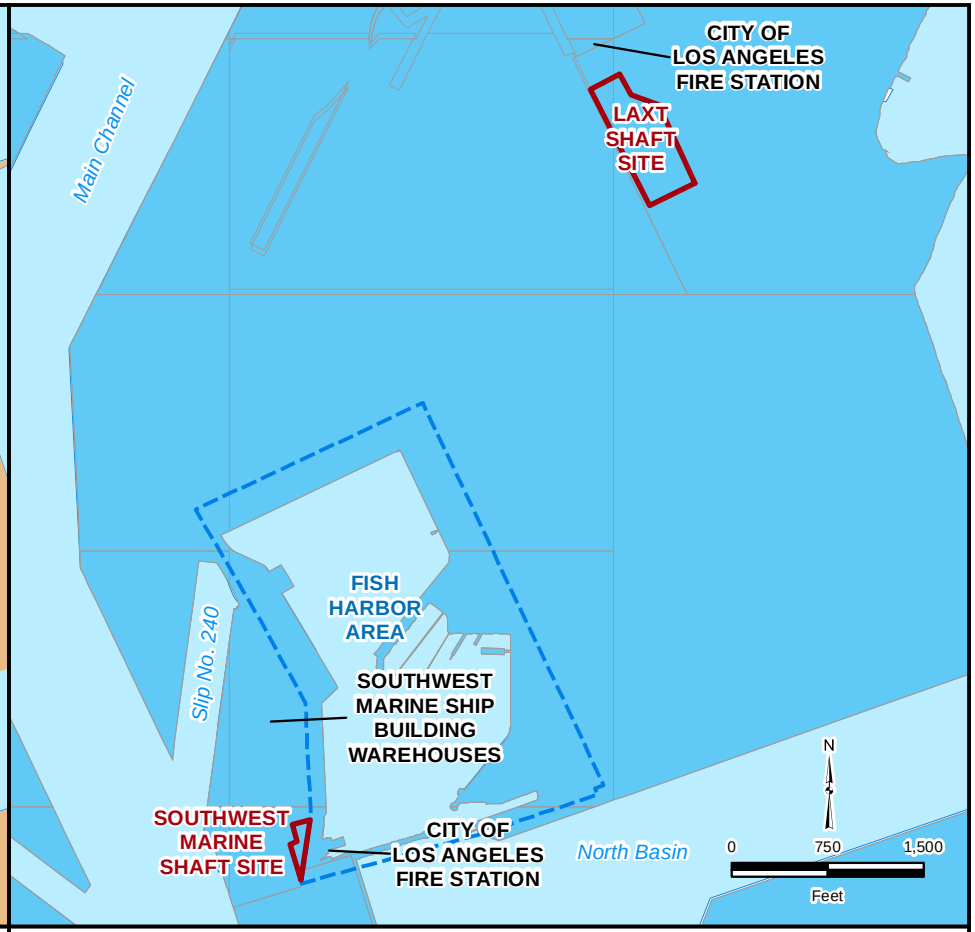
FIGURE 12-9

CLEARWATER Program

Master Plan for the Port of Los Angeles

Source: Sanitation Districts of Los Angeles County 2011, Port of Los Angeles 2011, LARIAC 2007





GENERAL PLAN LAND USE

- Container
- Breakbulk
- Liquid Bulk
- Maritime Support
- Passenger
- Institutional
- Commercial Fishing
- Commercial
- Recreational
- Vacant

ZONING

- Unclassified Manufacturing

FIGURE 12-10

CLEARWATER Program

LAXT and Southwest Marine Shaft Sites and Fish Harbor Area General Plan Land Use and Zoning

Source: Sanitation Districts of Los Angeles County 2011, Port of Los Angeles 2011, ZIMAS 2011

designations based on SCAG data generally found along the route are the same as those identified for the Wilmington to SP Shelf alignment, with the addition of petroleum and natural gas processing and open space.

Figueroa/Western to Royal Palms Alignment

The Figueroa/Western to Royal Palms tunnel alignment, the entire length of which is considered an onshore alignment, would begin at the JWPCP West shaft site, head south on Figueroa Street, turn southwest under I-110 right-of-way and the city of Los Angeles-owned Harbor Regional Park, continue south on North Gaffey Street, turn west on Capitol Drive, and south on Western Avenue to Royal Palms Beach (see Figure 3-15). Where the alignment turns from Figueroa Street to cross I-110, it may possibly traverse underneath a city of Los Angeles parcel and a private commercial parcel. Where the alignment turns to the west to follow Capitol Drive, it would pass beneath a commercial parcel and a strip owned by the city of Los Angeles. It would also cross under a private commercial parcel as it turns south onto Western Avenue from Capitol Drive. As the alignment joins Western Avenue, it would turn onto South Dodson Avenue where it would traverse beneath a public school parking lot and may possibly traverse under a private parcel. The alignment would also traverse underneath city of Los Angeles- and Los Angeles County-owned parcels before terminating at the Sanitation Districts' existing ocean outfalls manifold structure at Royal Palms Beach.

The Figueroa/Western to Royal Palms alignment would be tunneled approximately 70 to 450 feet bgs through the city of Carson, the city of Los Angeles community of Wilmington-Harbor City, a small portion of the city of Rancho Palos Verdes, and the city of Los Angeles community of San Pedro. The following existing land uses are located along the route: major medical health care facilities; commercial; residential; retail; industrial, manufacturing, and warehousing; petroleum and natural gas facilities; public facilities; schools; religious facilities; mineral extraction; and vacant land.

12.2.2.2 Shaft Site

JWPCP East

The JWPCP East shaft site is located within the property boundaries of the JWPCP, which is owned by the Sanitation Districts (see Figure 3-17). It is within the jurisdiction of the City of Carson General Plan. The land use designation is industrial, and the zoning is heavy manufacturing (City of Carson 2004). The general plan land use designations and zoning for the JWPCP East shaft site and the surrounding area are identified on Figures 12-6 and 12-7. The site is approximately 25 acres and is currently undeveloped and fenced off from the public. It is generally flat and vacant with sparse ruderal vegetation. The site is bound by the JWPCP to the north and the west; Main Street in the city of Carson to the east; and Lomita Boulevard, which serves as the boundary line between the city of Carson and the city of Los Angeles, to the south.

Residential land uses exist to the south of the JWPCP East shaft site across Lomita Boulevard, and there are approximately 75 residences within 500 feet of this site. Additionally, there are residential and commercial land uses to the east across Main Street. Wilmington Middle School is located approximately 0.25 mile from the southeastern property boundary of the JWPCP at the intersection of Lomita Boulevard and Gulf Avenue.

JWPCP West

The JWPCP West shaft site is located within the property boundaries of the JWPCP. It is mostly within the jurisdiction of the City of Los Angeles' Wilmington-Harbor City Community Plan; a small portion to the north is within the jurisdiction of the City of Carson General Plan (City of Los Angeles 1999b; City of Carson 2004). It has a land use designation of public facility and a zoning designation of public facilities

GENERAL PLAN LAND USE

- Low Density Residential (1 to 6 dwelling units/acre - du/ac)
- Low/Medium Density Residential (6 to 12 du/ac)
- Open Space

ZONING

- Single-Family Residence
- Open Space

FIGURE 12-11

CLEARWATER Program

Angels Gate Shaft Site
General Plan Land Use and Zoning

Source: Sanitation Districts of Los Angeles County 2011, San Pedro Community Plan 2010, ZIMAS 2010, ESRI 2011

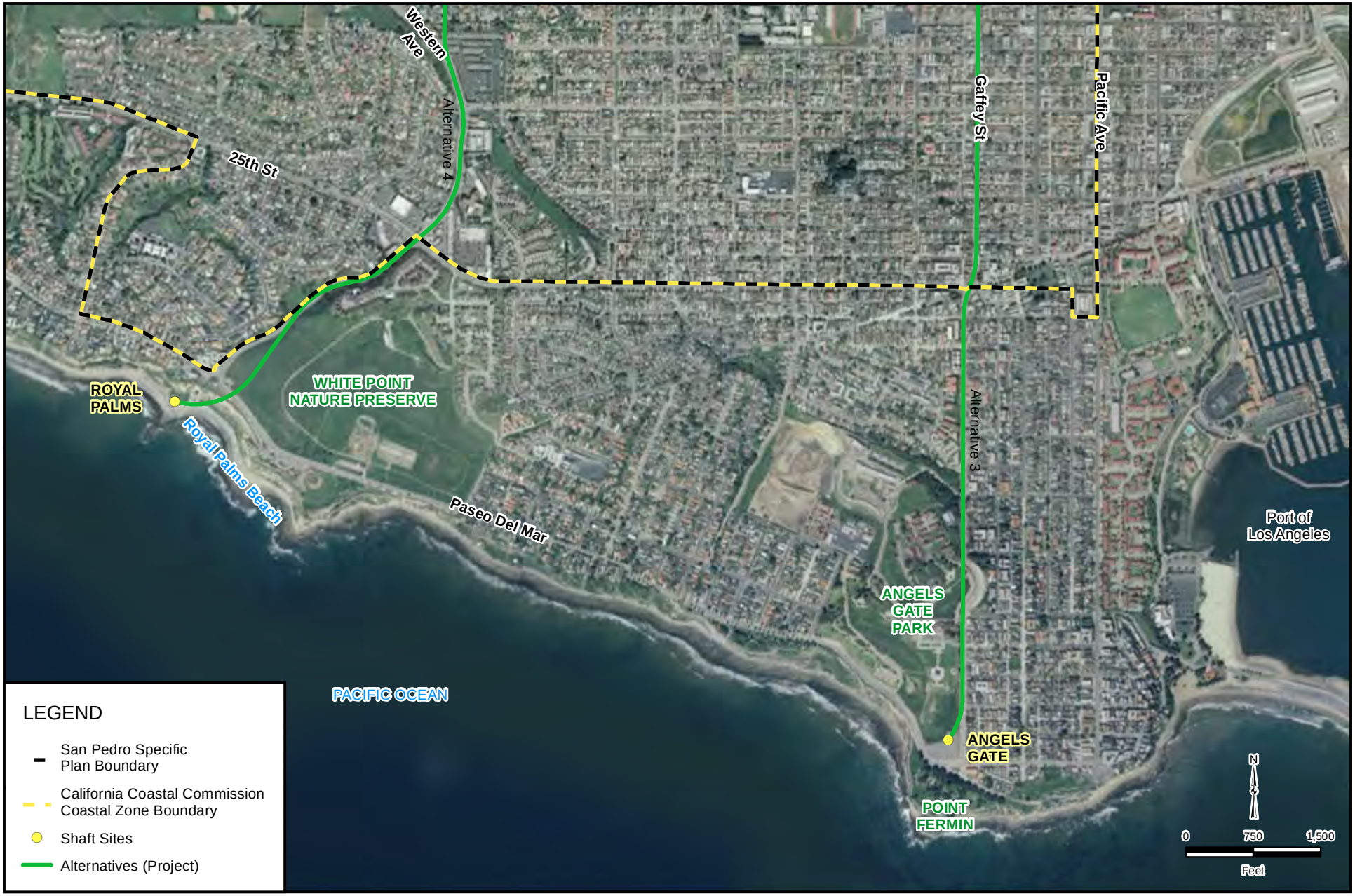


FIGURE 12-12

CLEARWATER Program

Coastal Zone Boundary

Source: Sanitation Districts of Los Angeles County 2011, Los Angeles County 2011, CalTrans 2009, ESRI 2011

GENERAL PLAN LAND USE

- Low Density Residential (1 to 6 dwelling units/acre - du/ac)
- Open Space

ZONING

- Single-Family Residence
- Open Space

FIGURE 12-13

CLEARWATER Program

Royal Palms Shaft Site
General Plan Land Use and Zoning

Source: Sanitation Districts of Los Angeles County 2011, San Pedro Community Plan 2010, ESRI 2011

(City of Los Angeles 1999b; City of Los Angeles 2010a). The small portion to the north has a land use and zoning designation that is the same as the JWPCP East shaft site. The general plan land use designations and zoning for the JWPCP West and the surrounding area are identified on Figures 12-6 and 12-7. The purpose of the public facilities zone is to provide regulations for the use and development of publicly owned land in order to implement the city's adopted general plan, including the service system element. The site is approximately 18 acres and is currently vacant. It is generally used for construction staging and storage. The northern portion of the site is transected by Lomita Boulevard. It is bound by the JWPCP facilities to the north, Figueroa Street to the east, I-110 to the west, and vacant land owned by the state of California to the south (see Figure 3-18). There are no residential land uses within the immediate vicinity of the site. There is a commercial property within the site just south of Lomita Boulevard. The Wilmington Athletic Complex and the Wilmington Boys and Girls Club are located to the east and southeast of the site, respectively, across from Figueroa Street. There are residential uses to the southeast just below the Wilmington Boys and Girls Club. There are also residential uses to the west; however, I-110 separates the site from these residences. Further west is the Wilmington Drain, a north/south flood control channel that flows into Machado Lake and then into the Los Angeles Harbor.

TraPac

The TraPac shaft site is located along Wilmington Boulevard just south of Harry Bridges Boulevard (see Figure 3-19). It is located within the Port of Los Angeles in Planning Area 5A at the existing TraPac Container Terminal. The land use designation for this site is container (Port of Los Angeles 2011). The Port of Los Angeles Master Plan identifies the land use as general cargo, liquid bulk, dry bulk, commercial fishing, institutional, and industrial (Port of Los Angeles 2002). The zoning for this area is identified as unclassified manufacturing (ZIMAS 2011). The general plan land use designations and zoning for the TraPac site and the surrounding area are identified on Figure 12-8. The Port of Los Angeles Master Plan land uses are identified on Figure 12-9. The site is less than 1 acre and the adjacent land use is the TraPac Container Terminal, which operates 24 hours per day.

LAXT

The LAXT shaft site is located on Terminal Island in the Port of Los Angeles on Ferry Street across from the city of Los Angeles's Terminal Island Water Reclamation Plant (TIWRP) (see Figure 3-20). The site is located in Planning Area 9 of the Port of Los Angeles (Port of Los Angeles 2002). It is located on the western portion of the former Petroleum Coke Storage and Reclaim Facility Site. The land use designation of this site is vacant (Port of Los Angeles 2011). It is designated in the Port of Los Angeles Master Plan as general cargo, dry bulk, institutional, and industrial (Port of Los Angeles 2002). The zoning is unclassified manufacturing (ZIMAS 2011). The general plan land use designations and zoning for the LAXT site and the surrounding area are identified on Figure 12-10. The Port of Los Angeles Master Plan land uses are identified on Figure 12-9. The site is approximately 7 acres and is currently developed with railroad tracks maintained by the Los Angeles Harbor Department, a bridge structure, and LAXT structures, which are being demolished. Demolition of the LAXT structures would be completed prior to the start of project construction. The railroad tracks and bridge structures would remain. North of the site are the Port of Los Angeles Fire Department buildings and training area as well as the Vincent Thomas Bridge. West of the site is the TIWRP.

Southwest Marine

The Southwest Marine shaft site is located in between the Main Channel of the Los Angeles Harbor (to the west) and Fish Harbor (to the east) in the Port of Los Angeles (see Figure 3-21). It is located in Planning Area 7 and has a designated land use of maritime support (Port of Los Angeles 2011). It is designated in the Port of Los Angeles Master Plan as general cargo, liquid bulk, dry bulk, commercial fishing, institutional, and industrial (Port of Los Angeles 2002). It is zoned as unclassified manufacturing (ZIMAS 2011). The general plan land use designations and zoning for the Southwest Marine site and the

surrounding area are identified on Figure 12-10. The Port of Los Angeles Master Plan land uses are identified on Figure 12-9.

The site is less than 1 acre. It does not contain any permanent buildings and it is partially located on wharf structures. Located just west and north of the site are the Southwest Marine buildings and dry docks. Beyond these structures is the Main Channel of the Port of Los Angeles. These buildings have been deemed eligible for listing in the National Register of Historic Places as the Bethlehem Shipyard Historic District because they represent the last remaining example of the World War II shipbuilding industry; however, the slipways themselves are not eligible for listing and do not contribute to the historic district due to the fact that they have undergone extensive demolition and reconfiguration. Located farther north of the site is Berth 240. South of the site is Reservation Point and the Federal Correctional Institution on Terminal Island.

Angels Gate

The Angels Gate shaft site would be located on a vacant lot used as overflow parking for Point Fermin Park. The site is near the southern boundary of Angels Gate Park at the intersection of South Gaffey Street and Shepard Street (see Figure 3-22). The property is owned by the city of Los Angeles and maintained by the City of Los Angeles Department of Recreation and Parks. It is designated by the San Pedro Community Plan, an element of the City of Los Angeles General Plan, as open space and it is zoned as open space (City of Los Angeles 1999a; City of Los Angeles 2010a). The general plan land use designations and zoning for the Angels Gate site and the surrounding area are identified on Figure 12-11. The purpose of the open space zone is to provide regulations for publicly owned land in order to implement the city's adopted general plan, including the recreation, parks, and open space designations in the city's adopted district and community plans, and other relevant elements, including the Open Space, Conservation, and Public Recreation Elements. It is within the boundary of the coastal zone and the San Pedro Specific Plan (City of Los Angeles 1999a). The coastal zone and San Pedro Specific Plan boundary are shown on Figure 12-12. It is identified as a location with Coastal Zone Commission Authority and as a dual jurisdictional coastal zone (City of Los Angeles 2010b). Section 30600B of the California Coastal Act gives authority to local jurisdictions such as the city of Los Angeles to permit projects in the coastal zone; however, the California Coastal Commission must also grant a permit in areas identified as dual jurisdictional. Additional details regarding the dual jurisdictional requirements for shaft sites are provided in Table 12-5. The site is approximately 3 acres. To the north of the site is the Korean Bell of Friendship and Angels Gate Park. Residential homes are located to the east of the site. Point Fermin Park and the Pacific Ocean are located to the south of the site.

Royal Palms

The Royal Palms shaft site would be located at Royal Palms Beach near the beach access road off West Paseo Del Mar, primarily on property owned by the Sanitation Districts (see Figure 3-23). The remaining property within Royal Palms Beach is owned and operated by the County of Los Angeles. It is designated by the San Pedro Community Plan as open space, and it is zoned as open space (City of Los Angeles 1999a; City of Los Angeles 2010a). The general plan land use designations and zoning for the Royal Palms site and the surrounding area are identified on Figure 12-13. It is also within the boundary of the coastal zone and the San Pedro Specific Plan (City of Los Angeles 1999a). The coastal zone and San Pedro Specific Plan boundary are shown on Figure 12-12. It is identified as a location with Coastal Zone Commission authority and as a dual jurisdictional coastal zone (City of Los Angeles 2010b). The site is approximately 1 acre. Immediately south and southwest of the site is the Pacific Ocean. A promenade of palm trees with picnic tables and benches is to the west of the site. On the bluff above the site are single-family residential homes, and the White Point Nature Preserve is located across from Paseo Del Mar.

12.2.2.3 Riser/Diffuser Area

A new riser and diffuser would be located on either the SP Shelf or the PV Shelf; the existing ocean outfalls are located on the PV Shelf. The Pasha Terminal and Fish Harbor may be utilized in connection with construction on the SP Shelf and PV Shelf and, therefore, they are discussed in the following section as well.

San Pedro Shelf

The SP Shelf riser and diffuser area is located more than 3 nautical miles off the Southern California coast. Therefore, it is located in federal waters, rather than state waters, and is primarily governed by the Coastal Zone Management Act (CZMA), which is discussed in Section 12.3.1.

Palos Verdes Shelf

The PV Shelf riser and diffuser area is located within 3 nautical miles off the Southern California coast. Therefore, it is located in state waters, primarily governed by the California Coastal Act and local coastal programs, which is discussed in Sections 12.3.2 and 12.3.3.

Existing Ocean Outfalls

The existing ocean outfalls are located within 3 nautical miles off the Southern California coast. Therefore, they are located in state waters, primarily governed by the California Coastal Act and local coastal programs, which are discussed in Sections 12.3.2 and 12.3.3.

Pasha Terminal

It is assumed that the Pasha Terminal (Berths 174–181) located within the Port of Los Angeles would be a suitable potential location for riser and diffuser assembly and marine transport to the construction site. The Pasha Terminal is located in Planning Area 5 of the Port of Los Angeles Plan. The land use designation, zoning, and Port of Los Angeles Master Plan designation are the same as those for the TraPac site. The general plan land use designations and zoning for the Pasha Terminal and the surrounding area are identified on Figure 12-8. The Port of Los Angeles Master Plan land uses are identified on Figure 12-9. Pasha Terminal is adjacent to the East Basin Channel. Slip No. 5 is located to the north and east of the Pasha Terminal, and bulk liquid storage tanks are located to the west. The TraPac Container Terminal is located farther west across Slip No. 1.

Fish Harbor

It is assumed that the Fish Harbor area within the Port of Los Angeles would be a potential location for the loading of excavated material from the offshore tunnel deemed to be suitable for ocean disposal onto barges for transport to an approved ocean disposal site. The Fish Harbor area is located in Planning Area 8 of the Port of Los Angeles. The land use designations of this area are commercial fishing, container, break bulk, liquid bulk, maritime support, institutional, recreational, and vacant (Port of Los Angeles 2011). The Port of Los Angeles Master Plan allows commercial fishing, recreation, industrial, liquid bulk, and other land uses in the Fish Harbor area (Port of Los Angeles 2002). The zoning is unclassified manufacturing (ZIMAS 2011). The general plan land use designations and zoning for the Fish Harbor area and the surrounding area are identified on Figure 12-10. The Port of Los Angeles Master Plan land uses are identified on Figure 12-9. Slip No. 240 and Southwest Marine are located to the west of the Fish Harbor area, and the North Basin is located to the south. LAXT is located approximately 0.5 mile north-northeast of the Fish Harbor area.

12.3 Regulatory Setting

Land use plans and policy documents set forth regulations pertaining to allowed development. For a description of applicable plans, laws, and regulations associated with specific resources, such as air quality, historical structures or cultural resources, marine environment, noise, recreation, and traffic and transportation, refer to each specific resource chapter in this document. For example, all applicable South Coast Air Quality Management District plans and regulations related to air quality are specifically discussed and addressed in Chapter 5. Program- and project-related land use plans, policies, and regulations are discussed in this section.

12.3.1 Federal

Federal land use planning regulations are typically not applicable to the program elements because land use and planning decisions are made at the local level (for a discussion of applicable federal regulations regarding United States [U.S.] Army Corps of Engineers [Corps] jurisdiction, see the National Environmental Policy Act [NEPA] Scope of Analysis discussion in Chapter 3). However, there is one federal land use policy, described in Table 12-4, applicable to the project elements located off of the California coast.

Table 12-4. Applicable Federal Land Use Policy

Summary of Applicable Federal Land Use Policy	Relevant Project Element or Location
Coastal Zone Management Act, 1972	
▪ The CZMA is a federal and state partnership for management of coastal resources that encourages states to develop coastal management programs, through, among other means, the federal consistency procedures of the CZMA. ▪ Upon certification of a state's coastal management program, a federal agency must conduct its activities (including federal development projects, permits and licenses, and assistance to state and local governments) in a manner consistent with the state's certified program. The federal government certified the California Coastal Management Program (CCMP) in 1977. The enforceable policies of that document are in Chapter 3 of the California Coastal Act of 1976. ▪ The process established to implement this requirement is called a consistency determination for federal activities and development projects; it is called a consistency certification for federal permits and licenses and federal support to state and local agencies (CCC 2010a). ▪ A federal agency may use its NEPA documents as a vehicle for its consistency determination (15 Code of Federal Regulations Section 930.37). However, a federal agency's federal consistency obligations under the act are independent of those required under NEPA. State agencies will not require federal agencies to submit NEPA documents as information required pursuant to Section 930.39. If a federal agency includes its consistency determination in a NEPA document, the federal agency will ensure that the NEPA document includes the information required.	▪ Wilmington to SP Shelf alignment[a] ▪ SP Shelf riser and diffuser area

[a] For Alternative 1, the portion of the offshore tunnel alignment that extends between 3 nautical miles offshore and the riser and diffuser area would be subject to a Coastal Zone Consistency determination performed by the Corps.

12.3.2 State

State, regional, and local governments provide regulatory guidance for land use decisions. The applicable state land use plans, policies, and regulations and the applicable program and project elements are summarized in Table 12-5.

Table 12-5. Applicable State Land Use Plans, Policies, and Regulations

Summary of Applicable State Land Use Plans, Policies, and Regulations	Relevant Project Element or Location
California Tidelands Trust Act, 1911	
▪ Submerged lands and tidelands within the Port of Los Angeles are held in trust by the city of Los Angeles and administered by the Harbor Department to promote and develop commerce, navigation, fisheries, and other uses of statewide interest and benefit, including commercial, industrial, and transportation uses; public buildings and public recreational facilities; wildlife habitat; and open space.	▪ Wilmington to SP Shelf alignment[a] ▪ Wilmington to PV Shelf alignment[a] ▪ Figueroa/Gaffey to PV Shelf alignment[b] ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site
California Coastal Act, 1976, and Local Coastal Programs (Various)	
▪ The California Coastal Act declares that the California Coastal Zone is a distinct and valuable resource of vital interest to all the people and exists as a balanced ecosystem. ▪ The act identifies the Port of Los Angeles and its facilities as a "one of the state's primary economic and coastal resources and…an essential element of the national maritime industry" (Public Resources Code [PRC] Section 30701). ▪ The act establishes that the highest priority for any water or land area use within the Port of Los Angeles will be for developments that are completely dependent on such harbor water areas and/or harbor land areas for their operations (Sections 30001.5 (d), 30255, and 31260). The act further provides that the "highest priority [be given] to the use of existing land space within harbors for port purposes, including, but not limited to, navigational facilities, shipping industries, and necessary support and access facilities" (Section 30708 (c)). ▪ In order to protect, maintain, and where feasible, enhance and restore the overall quality of this ecosystem, the act requires the local government to prepare a local coastal program (LCP) for those parts of the coastal zone within its jurisdiction. ▪ After an LCP has been finally approved, the California Coastal Commission's coastal permitting authority over most new development is transferred to the local government, which applies the requirements of the LCP in reviewing proposed new developments. The Commission retains permanent coastal permit jurisdiction over development proposed on tidelands, submerged lands, and public trust lands, and the Commission also acts on appeals from certain local government coastal permit decisions. The Commission reviews and approves any amendments to previously certified Local Coastal Programs (CCC 2010b). ▪ The act gives the Los Angeles Harbor Department coastal development permit authority for activities in the Port of Los Angeles. The Port of Los Angeles Master Plan (described further in Table 12-6) acts as the LCP for the Port of Los Angeles. ▪ The San Pedro Specific Plan acts as the LCP for the community of San Pedro. Although the city of Los Angeles does not have a implementing ordinance for the LCP, Section 30600B of the California Coastal Act gives authority to local jurisdictions such as the city of Los Angeles to permit projects in the coastal zone. The City of Los Angeles would play a similar role to that of the Los Angeles Harbor Department regarding coastal permitting within the San Pedro Specific Plan jurisdiction. However, certain areas within the specific plan are identified as dual jurisdiction areas, where the California Coastal Commission must also grant a permit. The specific plan is intended to promote a sense of community consistent with San Pedro's maritime heritage, while remaining consistent with the general plan, the San Pedro Community Plan (described further in Table 12-6), and the California Coastal Act Policies.	▪ Wilmington to SP Shelf alignment[c] ▪ Wilmington to PV Shelf alignment[c] ▪ Figueroa/Gaffey to PV Shelf alignment[d] ▪ Figueroa/Western to Royal Palms alignment[d] ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site ▪ Angels Gate shaft site ▪ Royal Palms shaft site ▪ PV Shelf riser and diffuser area ▪ Existing ocean outfalls

Table 12-5 (Continued)

Summary of Applicable State Land Use Plans, Policies, and Regulations	Relevant Project Element or Location
[a] For Alternatives 1 and 2, the portion of the onshore tunnel and the offshore tunnel located between the coastal zone boundary and the breakwaters of the Port of Los Angeles would be subject to permits granted by the Harbor Commission under the California Tidelands Trust Act. [b] For Alternative 3, the portion of the onshore tunnel under John S. Gibson Boulevard (where the tunnel would be constructed beneath land owned by the city of Los Angeles and operated by the Port of Los Angeles) would be subject to permits granted by the Harbor Commission under the California Tidelands Trust Act. [c] For Alternatives 1 and 2, the portion of the offshore tunnel that extends from the breakwater to up to 3 nautical miles offshore would require California Coastal Commission review and permits. [d] For Alternative 3, the portion of the onshore tunnel located within the coastal zone boundary and the offshore tunnel that extends from the shoreline up to 3 nautical miles offshore would require California Coastal Commission review and permits. For Alternative 4, the portion of the onshore tunnel located within the coastal zone boundary would also require California Coastal Commission review and permits.	

12.3.3 Regional and Local

The applicable regional and local land use plans and regulations are summarized in Table 12-6.

Table 12-6. Applicable Regional and Local Land Use Plans, Policies, and Regulations

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program/Project Element or Location/Facility
Southern California Association of Governments Regional Comprehensive Plan and Guide	
▪ SCAG Regional Comprehensive Plan and Guide (RCPG) covers SCAG's planning policy for important regional issues like housing, traffic/transportation, water, and air quality. The RCPG is based on the Compass Growth Vision and 2% Strategy adopted in April 2004, which are based on the principles of mobility, livability, prosperity, and sustainability.	▪ All program elements, except conveyance improvements, and water reclamation plant (WRP) effluent management, and all project elements
Congestion Management Program	
▪ The Congestion Management Program (CMP) is a state-mandated program intended as the analytical basis for transportation decisions made through the State Transportation Improvement Program process.	▪ All program elements, except conveyance improvements and WRP effluent management, and all project elements
Los Angeles County General Plan, 1980	
▪ The county of Los Angeles guides future development through the county's general plan goals and policies.	▪ SJCWRP ▪ WNWRP
City of Pomona General Plan, 1980	
▪ The city of Pomona guides future development through the city's general plan goals and policies.	▪ POWRP
City of Pomona Zoning Ordinance	
▪ The City of Pomona Zoning Ordinance is created to carry out the policies of the City of Pomona General Plan. It is the intent of the zoning ordinance to promote the orderly development of the city; promote and protect the public health, safety, peace, comfort, and general welfare; protect the character, social, and economic vitality of the neighborhoods; and to ensure the beneficial development of the city.	▪ POWRP
Long Beach General Plan, 1989	
▪ The city of Long Beach guides future development through the city's general plan goals and policies.	▪ LBWRP

Table 12-6 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program/Project Element or Location/Facility
Long Beach Municipal Code	
▪ The Long Beach Municipal Code codifies those ordinances of the city governing the establishment of certain offices and boards; the conduct of city government; organization to cope with disasters; fire prevention; police and traffic regulation; public safety; public welfare; public works; buildings and signs; prohibition of certain defined acts and punishment for violation of code provisions; regulation, control, and licensing of businesses, trades, professions, and other occupations; health and sanitation regulations; oil production; use of land in the city; municipal gas service and rates; regulation of city streets; operation of public facilities; and other matters of general interest.	▪ LBWRP
City of Cerritos General Plan, 2004	
▪ The city of Cerritos guides future development through the city's general plan goals and policies.	▪ LCWRP
City of Cerritos Zoning Ordinance	
▪ The City of Cerritos Zoning Ordinance is created to carry out the policies of the City of Cerritos General Plan. It is the intent of the zoning ordinance to promote the orderly development of the city; promote and protect the public health, safety, peace, comfort, and general welfare; protect the character, social, and economic vitality of the neighborhoods; and to ensure the beneficial development of the city.	▪ LCWRP
City of Carson General Plan, 2004	
▪ The city of Carson guides future development through the city's general plan goals and policies. ▪ The role of the general plan is to act as a constitution for the development and the foundation upon which all land use decisions are to be based. Land use decisions encompass not only zoning, but also circulation, design, open space, and other factors. The general plan is a policy document to assist and guide local decision makers. Projects within the jurisdiction of the general plan must be consistent with the land use plan and further the goals of the other elements of the general plan and meet the intent of the policies.	▪ JWPCP ▪ Wilmington to SP Shelf alignment ▪ Wilmington to PV Shelf alignment ▪ JWPCP East shaft site
City of Carson Zoning Ordinance	
▪ The zoning ordinance is to serve the public health, safety, comfort, convenience, and general welfare by establishing land use districts designed to obtain the physical, environmental, economic, and social advantages resulting from planned use of land in accordance with the City of Carson General Plan, and by establishing those regulations for the development and use of land and improvements within the various districts, which will ensure that the growth and development of the city of Carson will be orderly, attractive, and efficient for the maximum benefit of its citizens.	▪ JWPCP ▪ JWPCP East shaft site
City of Rancho Palos Verdes General Plan, 1975	
▪ The city of Rancho Palos Verdes guides future development through the city's general plan goals and policies.	▪ Figueroa/Western to Royal Palms alignment

Table 12-6 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program/Project Element or Location/Facility
City of Los Angeles General Plan Framework Element, 2001	
▪ The general plan framework is a strategy for long-term growth that sets a citywide context to guide the update of the community plan and citywide elements. It is a comprehensive, long-range document containing purposes, polices, and programs for the development of the city of Los Angeles. The policies of the framework element in all instances are to seek solutions to public infrastructure and service deficiencies, including their expansion commensurate with the levels of demands experienced. ▪ The element responds to state and federal mandates to plan for the city of Los Angeles' future. The framework element supersedes Concept Los Angeles and the citywide elements of the City of Los Angeles General Plan. In many respects, the framework element is an evolution of the centers concept, adopted in 1974, that provides fundamental guidance regarding the city's future.	▪ Wilmington to SP Shelf alignment ▪ Wilmington to PV Shelf alignment ▪ Figueroa/Gaffey to PV Shelf alignment ▪ Figueroa/Western to Royal Palms alignment ▪ Angels Gate shaft site ▪ Royal Palms site
City of Los Angeles General Plan	
▪ The city of Los Angeles guides future development through the city's general plan goals and policies. It is a dynamic document that plans for the city's future growth and consists of the seven state-mandated elements, several optional elements, and the land use element or plan for each of the city's 35 community planning areas. ▪ It is the fundamental policy document of the city of Los Angeles that defines the framework by which the city's physical and economic resources are to be managed and utilized over time. Decisions by the city with regard to the use of land, design and character of buildings and open spaces, conservation of existing and provision of new housing, provision of supporting infrastructure and public and human services, protection of the environmental resources, and protection of residents from natural and man-caused hazards are guided by the plan.	▪ JWPCP West shaft site ▪ Wilmington to SP Shelf alignment ▪ Wilmington to PV Shelf alignment ▪ Figueroa/Gaffey to PV Shelf alignment ▪ Figueroa/Western to Royal Palms alignment ▪ Angels Gate shaft site ▪ Royal Palms shaft site
City of Los Angeles General Plan – San Pedro Community Plan, 1982	
▪ The San Pedro Community Plan serves as a basis for future development of the community and it is the land use plan portion of the city's LCP for San Pedro. The San Pedro LCP and the land use plan emphasize that public access, recreational opportunities, and visual qualities are to be maximized. ▪ The community plan is intended to promote an arrangement of land uses, streets, and services that will encourage and contribute to the economic, social, and physical health, safety, welfare, and convenience of the people who live and work in the community. ▪ The city of Los Angeles can grant coastal permits to locations within the San Pedro Specific Plan area per Section 30600B of the California Coastal Act (described in Table 12-5); however, areas designated within the dual jurisdictional coastal zone must also receive a permit from the California Coastal Commission.	▪ Figueroa/Gaffey to PV Shelf alignment ▪ Figueroa/Western to Royal Palms alignment ▪ Angels Gate shaft site ▪ Royal Palms shaft site
City of Los Angeles General Plan – Wilmington-Harbor City Community Plan, 1999	
▪ The Wilmington-Harbor City Community Plan is part of the general plan of the city of Los Angeles. ▪ The Wilmington-Harbor City Community Plan has the same intent as the San Pedro Community Plan described prior in this table.	▪ JWPCP West shaft site ▪ Wilmington to SP Shelf alignment ▪ Wilmington to PV Shelf alignment ▪ Figueroa/Gaffey to PV Shelf alignment
City of Los Angeles General Plan – Port of Los Angeles Plan, 2002	
▪ The Port of Los Angeles Plan is a part of the City of Los Angeles General Plan. It is intended to serve as the official 20-year guide to the continued development and operations of the port and is consistent with the Port of Los Angeles Master Plan (discussed later in this table). ▪ The Port of Los Angeles Plan's primary purposes are to promote an array of land and water uses, circulation, and services that contributed to the economic, social, and physical health, safety, welfare, and the convenience of the port within the larger context of the city of Los Angeles.	▪ Wilmington to SP Shelf alignment ▪ Wilmington to PV Shelf alignment ▪ Figueroa/Gaffey to PV Shelf alignment ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site

Table 12-6 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program/Project Element or Location/Facility
City of Los Angeles Municipal Code and Zoning Ordinance	
▪ The city implements the general plan utilizing a variety of tools, mainly through the application of zoning regulations. Traditional zones, specific plans, overlay districts, special use permits such as conditional uses, and a variety of other instruments all regulate the use of land. The zoning portion of the municipal code, specific plans, and other regulatory tools establish development standards applicable to matters such as heights of structures, setbacks, lot coverage, open space, parking, design, and the like.	▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site
Port of Los Angeles Master Plan With Amendments, 2002	
▪ The Port of Los Angeles Master Plan provides for the development, expansion, and alteration of the port (both short-term and long-term) for commerce, navigation, fisheries, port-dependent activities, and general public access. Those objectives are consistent with the provisions of the California Coastal Act (1976), the charter of the city of Los Angeles, and applicable federal, state, and municipal laws and regulations.	▪ Wilmington to SP Shelf alignment ▪ Wilmington to PV Shelf alignment ▪ Figueroa/Gaffey to PV Shelf alignment ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site
Port of Los Angeles Strategic Plan, 2006–2011	
▪ The Port of Los Angeles Strategic Plan has 11 objectives, each with initiatives/action items that respond to the strategic plan's mission, "To be the world's premier port in planning, design, and construction, and to promote a 'grow green' philosophy, while embracing evolving technology and meeting our fiduciary responsibilities while promoting global trade."	▪ Wilmington to SP Shelf alignment ▪ Wilmington to PV Shelf alignment ▪ Figueroa/Gaffey to PV Shelf alignment ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site
Port of Los Angeles Sustainability Plan, 2007	
▪ The development of the Port of Los Angeles Sustainability Plan is in response to the mayoral initialized Executive Directive No. 10, Sustainable Practices in the City of Los Angeles. ▪ The Port of Los Angeles Sustainability Plan is still in progress and, because of its draft status, will not be analyzed in detail per each applicable policy for consistency with project elements.	▪ Wilmington to SP Shelf alignment ▪ Wilmington to PV Shelf alignment ▪ Figueroa/Gaffey to PV Shelf alignment ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site
Public Street Right-of-Way and Subsurface Easements	
▪ Public roads are located within land that is referred to as a road right-of-way. Typically public utilities are found within the public right-of-way including electrical utilities, water utilities, wastewater utilities, shoulders, sidewalks, and traffic signs. Public right-of-way widths are established by deed, status, or through some other administrative process. ▪ A subsurface easement provides the use of the space under the ground by an entity that does not actually own the property on the surface of the ground. ▪ The Sanitation Districts would be required to obtain temporary occupational and permanent right-of-way easements (or similar instruments/agreements) through public and private property. The Sanitation Districts will make every attempt to obtain these easements from property owners voluntarily at fair market value. Qualified appraisers and established appraisal methodologies will be used to establish fair market value.	▪ Wilmington to SP Shelf alignment ▪ Wilmington to PV Shelf alignment ▪ Figueroa/Gaffey to PV Shelf alignment ▪ Figueroa/Western to Royal Palms alignment

Table 12-6 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program/Project Element or Location/Facility
▪ In the event that easements cannot be obtained voluntarily, the Sanitation Districts' Boards of Directors may approve the use of eminent domain to acquire the necessary easements. Under eminent domain proceedings, a property owner is entitled to the fair market value of the temporary and permanent loss of property value due to the easement. The property owner has the opportunity to argue the fair market value of these losses before an impartial judge or jury. Eminent domain also provides for relocation assistance. However, it is not anticipated that project construction and operation would require relocation.	

12.4 Environmental Impacts and Mitigation Measures

12.4.1 Methodology and Assumptions

This analysis evaluates the consistency or compliance of the program and project elements with relevant land use plans, policies, and regulations. The jurisdictions of the land use plans, policies, and regulations were determined based on the location of the various program and project elements. The analysis determines if there is the potential for physical incompatibilities between the program and project elements and onsite and/or adjacent land uses based on potential conflicts. This analysis is focused specifically on land use plans, policies, and regulations. Existing plans, policies, and regulations governing specific resources such as air quality, noise, hazards and hazardous materials, etc., are identified and discussed in the relevant resource chapters of this EIR/EIS. Furthermore, secondary effects (e.g., noise generated outside allowable zoning ordinance timeframes) associated with inconsistencies between program and project elements and applicable land use plans, policies, and regulations are discussed within the specific applicable resource chapters. Two program elements, conveyance improvements and WRP effluent management, are not analyzed for each land use jurisdiction. Conveyance improvements are primarily constructed within public rights-of-way, which do not present a land use conflict, and WRP effluent management does not have a physical impact tied to land use. Land use policies and regulations are not applicable to the portion of the tunnel alignments extending beyond the coastline or past the breakwaters of the Port of Los Angeles, the riser and diffuser area on the SP Shelf, the riser and diffuser area on the PV Shelf, or the existing ocean outfalls. However, the project must comply with the (CZMA), California Tidelands Trust Act, and California Coastal Act. Therefore, the analysis includes these project elements as they relate to these coastal acts. Additionally, Pasha Terminal and Fish Harbor are included in the analysis as described in Section 12.2.2.3. Compliance with the California State Ocean Plan and beneficial uses associated with the ocean are discussed in Chapter 13, which includes a discussion of impacts on the SP Shelf, PV Shelf, and the existing ocean outfalls.

Data used to perform the land use analysis was gathered from the existing general plans, municipal codes or zoning ordinances, and other relevant land use plans, policies, or regulations of primary agencies with jurisdiction over program or project elements. A review of the plans, policies, and regulations was conducted and relevant sections were selected on the basis of whether the plan, policy, or regulation was related to the program or project elements. Data was also used from Sanitation Districts' sources, including preliminary engineering reports for the project elements (Parsons 2011). Land ownership data to determine public right-of-way and the need for subsurface easements were compiled from the city of Los Angeles NavigateLA website, which allows access to maps developed by the Los Angeles County Assessor (Parsons 2011).

California law requires each county and city to develop and adopt a general plan. General plans for each program and project element within relevant jurisdictions were evaluated. General plans consist of a statement of development policies and sets forth goals and objectives. They are a comprehensive long-term plan for the physical development in a county or city. Therefore, construction that furthers the intent of general plans and is consistent under operating conditions with general plans is assumed to be overall consistent with applicable goals, policies, and objectives of the general plans. However, the analysis does acknowledge the temporary disruption during construction of the program and project elements to surrounding land uses where applicable.

For program elements where there may be a recently completed environmental impact report (EIR), the analysis incorporates the EIR by reference. For example, the Westlake Farms EIR was recently completed for the new Westlake Farm composting facility as a new facility for biosolids management. Therefore, the land use analysis incorporates herein the analysis performed in the Westlake Farms EIR. This new facility in Kings County would be used for composting biosolids as part of the Clearwater Program; however, it has already been analyzed under the Westlake Farms EIR. Therefore, all environmental impacts, including those associated with land use, have been appropriately analyzed and mitigated where needed and are not analyzed in this document.

The Corps needs evidence of compliance with the CCMP (CCC 2010c). Therefore, California Coastal Commission concurrence with a consistency certification of the federal consistency provisions would be required (CCC 2010c). Generally, the federal consistency unit will issue a waiver for the alternatives if local permits are appealable to the California Coastal Commission (such as at the Angels Gate shaft site and Royal Palms shaft site) (CCC 2010c). However, for Alternative 1, for the portion of the offshore tunnel from 3 nautical miles offshore to the riser/diffuser location, local permits would not be appealable to the California Coastal Commission because they have no jurisdiction over this area. Therefore, this portion of Alternative 1 requires a coastal zone consistency determination performed by the Corps. For project elements that are located in the coastal zone, the analysis assumes that if the project element is consistent with the California Coastal Act and the local coastal programs, it is consistent with the federal CZMA. The federal CZMA requires a federal agency to conduct its activities in a manner consistent with the state's certified coastal program. The state's coastal program is outlined and implemented through the California Coastal Act and the local coastal programs. Consistency with these state and local policies should result in consistency with the federal CZMA. However, the Corps would require a federal consistency determination from the California Coastal Commission as part of its permit process.

12.4.1.1 Baseline

CEQA Baseline

The California Environmental Quality Act (CEQA) baseline includes the existing land use designations and zoning for the locations where program and project elements would be constructed and operated. Furthermore, the baseline includes the existing surrounding land uses.

NEPA No-Federal-Action Baseline

The NEPA no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the condition of resources at the year 2022 when construction of project elements under the Corps jurisdiction would conclude.

The project area is fully developed and encompasses industrial, commercial, residential, and recreational uses. Furthermore, the project alternatives would not permanently change land use patterns. Therefore, the analysis assumes that the existing land use and planning patterns would continue to remain in a

comparable state through the completion of construction in 2022. As a result, the NEPA no-federal-action baseline is the same as the CEQA baseline.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

12.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for land use (LU):

LU-1. Physically divides an established community.

LU-2. Conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

LU-3. Is located within the vicinity of a private airstrip and results in a conflict with the airport land use plan, or where such a plan has not been adopted, is located within 2 miles of an airport or private airstrip and result in safety hazard for people residing or working in the project area.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on land use and planning before mitigation. Table 12-7 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 12-7 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 12-7. Thresholds Evaluated

		Threshold		
	Alt.	**LU-1**	**LU-2**	**LU-3**
Program Element				
SJCWRP Plant Expansion	1–5		X	
SJCWRP Process Optimization	1–4		X	
POWRP Process Optimization	1–4		X	
LCWRP Process Optimization	1–4		X	
LBWRP Process Optimization	1–4		X	
JWPCP Solids Processing	1–5		X	
JWPCP Biosolids Management	1–5		X	

Table 12-7 (Continued)

		Threshold		
	Alt.	LU-1	LU-2	LU-3
Project Element				
Wilmington to SP Shelf (onshore tunnel)[a]	1,2		X	
Wilmington to SP Shelf (offshore tunnel)	1		X	
Wilmington to PV Shelf (onshore tunnel)[a]	1,2		X	
Wilmington to PV Shelf (offshore tunnel)	2		X	
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3		X	
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3		X	
Figueroa/Western to Royal Palms (onshore tunnel)	4		X	
JWPCP East Shaft Site	1,2		X	
TraPac Shaft Site	1,2		X	
LAXT Shaft Site	1,2		X	
Southwest Marine Shaft Site	1,2		X	
JWPCP West Shaft Site	3,4		X	
Angels Gate Shaft Site	3		X	
Royal Palms Shaft Site	4		X	
SP Shelf Riser/Diffuser Area	1		X	
PV Shelf Riser/Diffuser Area	2,3		X	
Existing Ocean Outfalls Riser/Diffuser Area	1–4		X	

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
Alt. = alternative

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears.

12.4.3 Alternative 1

12.4.3.1 Program

Impact LU-2. Would Alternative 1 (Program) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

The general increase in intensity of program element operations does not create a conflict with applicable land use plans or policies. Any increase in intensity or operations at the water reclamation plants (WRPs) is consistent with the existing uses of those facilities and the areas in which they are located. In general, the WRPs have been located in areas that are not proximate to heavily populated areas or sensitive uses. The JWPCP is one facility that is closer to sensitive land uses than the other facilities. However, the JWPCP has commercial, retail, and vacant land uses, which generally provide a buffer from residential and other sensitive land uses in the area. The CEQA consistency analysis for each relevant land use plan, policy, or regulation and each program element is summarized in Table 12-8.

Table 12-8. Alternative 1 (Program) Consistency Analysis of Regional and Local Land Use Plans, Policies, and Regulations

Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program	CEQA Analysis
Southern California Association of Governments Regional Comprehensive Plan and Guide		
The SCAG RCPG Guiding Principles include: ▪ Improve mobility for all residents. Improve the efficiency of the transportation system by strategically adding new travel choices to enhance system connectivity in concert with land use decisions and environmental objectives. ▪ Foster livability in all communities. Foster safe, healthy, walkable communities with diverse services, strong civic participation, affordable housing, and equal distribution of environmental benefits. ▪ Enable prosperity for all people. Promote economic vitality and new economies by providing housing, education, and job training opportunities for all people. ▪ Promote sustainability for future generations. Promote a region where quality of life and economic prosperity for future generations are supported by the sustainable use of natural resources.	▪ All program elements, except conveyance improvements and WRP effluent management	All program elements would be **consistent** with the SCAG RCPG. ▪ All program elements would ensure adequate JOS wastewater system capacity and reliability through the year 2050. The SCAG population forecasts indicate the JOS service area population would increase from 5.1 million in 2008 to approximately 6.3 million by 2050. While the construction and operation of the program elements do not have direct impacts on mobility, prosperity, transportation, or the economy of the JOS service area, they do indirectly impact the livability and sustainability of the JOS service area. Plant expansion at the SJCWRP; process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; and expansion of solids processing at the JWPCP would all allow for the uninterrupted continuation of wastewater treatment system-wide. This service continuity is important to the region so that residential, commercial, and industrial uses do not experience prolonged, negative disruptions in wastewater treatment service. Furthermore, the general increase of beneficial reuse of recycled water produced at the WRPs supports the sustainability of the region through 2050. The recycled water could be beneficially reused for a wide variety of purposes including additional groundwater recharge, landscape irrigation, or industrial processes and purposes. This beneficial reuse could reduce the reliance on potable water for uses that may not necessarily require potable water. Therefore, the construction and operation of the program elements would foster the livability of the JOS service area and promote sustainability for future generations.
Congestion Management Program		
The CMP was developed to: ▪ Link land use, transportation, and air quality decisions; ▪ Develop a partnership among transportation decision makers on devising appropriate transportation solutions that include all modes of travel; and ▪ Propose transportation projects that are eligible to compete for state gas tax funds. The CMP also includes a Land Use Analysis Program, which requires local jurisdictions to analyze the impacts of land use decisions on the regional transportation system. For development projects, an EIR is required based on local determination, and a transportation impact analysis must be incorporated into the EIR.	▪ All program elements, except conveyance improvements and WRP effluent management	All program elements would be **consistent** with the CMP. ▪ The program elements would not conflict with the CMP. A full analysis and determination associated with the CMP is included in Chapter 18 per the Land Use Analysis Program.

Table 12-8 (Continued)

Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program	CEQA Analysis
Los Angeles County General Plan, 1980		
The three specific sections of the Los Angeles County General Plan that are most relevant to the program elements are the Goals and Policies Chapter, the Land Use Element, and the Water and Waste Management Element. Applicable goals and policies from both these elements are summarized below. Goals and Policies ▪ Public Services 59. Promote the development and use of new and improved water and waste management technology. Land Use Element ▪ Ensure Compatibility of Development. Policy No. 11. Promote planned industrial development in order to avoid land use conflicts with neighboring activities. ▪ Improve Inter-Agency Coordination in Land Use Planning. Policy No. 30. Promote improved inter-jurisdictional coordination of land use policy matters between the county, cities, adjacent counties, special districts, and regional and subregional agencies. Water and Waste Element ▪ Relate Expansion of Service to Demonstrated Need. Policy No. 13. Program water and sewer service extensions to be consistent with general plan policies and to mitigate situations that pose immediate health and safety hazards. ▪ Reduce Detrimental Impacts on Natural and Man Made Environments. Policy No. 18. Provide protection for ground water recharge areas to ensure water quality and quantity. ▪ Reduce Detrimental Impacts on Natural and Man Made Environments. Policy No. 19. Avoid or mitigate threats to pollution of the ocean, drainage ways, lakes, and groundwater reserves. ▪ Reduce Detrimental Impacts on Natural and Man Made Environments. Policy No. 21. Design and construct new water and waste management facilities to maintain or protect existing riparian habitats. ▪ Reduce Detrimental Impacts on Natural and Man Made Environments. Policy No. 22. Design water and waste management systems that enhance the appearance of the neighborhoods in which they are located and minimize negative environmental impacts. The land use designation for the SJCWRP and WNWRP are industrial and open space under the Los Angeles County General Plan.	▪ SJCWRP ▪ WNWRP	The program elements at the SJCWRP and WNWRP would be **consistent** with the Los Angeles County General Plan. ▪ The SJCWRP is located in an industrial park area and the expansion and process optimization would be constructed and operated within this area; therefore, it avoids land use conflicts and protects industrial uses from incompatible uses. ▪ The release of the NOP and the scoping outreach activities described in the Clearwater Program Public Participation Report (under separate cover) promoted inter-jurisdictional coordination and included other county departments, adjacent cities, and stakeholders in understanding the activities to occur at the SJCWRP and WNWRP. ▪ The improvements at the SJCWRP and WNWRP would provide a reliable network of wastewater services and facilities. ▪ The improvements at the SJCWRP would not change the volume of treated effluent discharged to the unlined portions of San Jose Creek; therefore, the creek would continue to naturally recharge groundwater in the area and would not interfere with the protection of a natural groundwater recharge area. ▪ The improvements at the WNWRP may decrease the volume of treated effluent discharged to unlined portions of the Rio Hondo River. The impacts of this decrease in volume are fully analyzed and determined in Chapter 11. The impacts would not result in a lack of protection of a natural groundwater recharge area. ▪ The improvements at the SJCWRP and WNWRP would include the opportunities for beneficial reuse of treated effluent and would support the development of this non-potable water supply for irrigation and industrial processes. ▪ The construction and operation of the improvements at the SJCWRP and WNWRP would be located within the existing site of the facilities. Most improvements would be below ground and, therefore, would be designed to enhance the neighborhoods in which they are located. All above ground improvements at the SJCWRP would be the same size and scale as the existing equipment located at the facility and would appropriately blend in with the existing equipment. The program elements at the SJCWRP and WNWRP would be **consistent** with the General Plan land use designations. ▪ The improvements would be contained within the existing site of the facilities and would not alter or change the purpose of the facilities to provide wastewater treatment services to the JOS service area.

Table 12-8 (Continued)

Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program	CEQA Analysis
Los Angeles County Zoning Ordinance		
▪ The zoning for the SJCWRP is residential agriculture. ▪ The zoning for the WNWRP is open space.	▪ SJCWRP ▪ WNWRP	The program elements at the SJCWRP and WNWRP would be **consistent** with the zoning. ▪ The improvements at the SJCWRP would be contained within the existing site of the facility. They would support the existing purpose of SJCWRP as a wastewater treatment plant and the future operation of the SJCWRP. Therefore, the improvements would not conflict with the residential-agriculture zoning. ▪ The potential change in volume of effluent discharged from the WNWRP would continue to be discharged from the same discharge points and, therefore, would not conflict with the open space zoning.
City of Pomona General Plan,1980		
There are no specific City of Pomona General Plan policies or elements that are relevant to the program elements. The land use designation for the POWRP is institutional.	▪ POWRP	The program elements at the POWRP would be **consistent** with the land use designation for the POWRP. ▪ The improvements at the POWRP would be contained within the existing site of the facility. They would support the existing purpose of the POWRP as a wastewater treatment plant and the future operation of the POWRP. The POWRP would be consistent with the surrounding industrial land uses and the open space of Elephant Hill. Therefore, the improvements would not conflict with the existing Institutional designation.
City of Pomona Zoning Ordinance		
▪ The zoning for the POWRP is public land/open space.	▪ POWRP	The program elements at the POWRP would be **consistent** with the zoning for POWRP. ▪ The improvements at POWRP would be contained within the existing site of the facility. They would support the existing purpose of POWRP as a wastewater treatment plant and the future operation of the POWRP. Therefore, the improvements would not conflict with the existing open space zoning.
City of Cerritos General Plan, 2004		
The two specific elements of the City of Cerritos General Plan that are most relevant to the project are the land use element and the growth management element. Applicable goals and policies from both these elements are summarized below. Land Use Element ▪ Goal LU-2; Policy LU-2.4. Attract and maintain land uses that generate revenue for the city of Cerritos, while maintaining a balance of other community needs such as housing, open space, and public facilities. ▪ Goal LU-4. Adjacent land uses shall be compatible with one another.	▪ LCWRP	The program elements at the LCWRP would be **consistent** with the City of Cerritos General Plan. ▪ The improvements at the LCWRP would meet community public service needs of efficient and reliable wastewater treatment. All improvements would be within the site of the facility. ▪ Once operational, process optimization would be consistent with the adjacent land uses of the golf course and the commercial/industrial uses to the north. Furthermore, process optimization as part of the existing wastewater facility is consistent with the surrounding land uses. During construction, the driving range of the golf course would

Table 12-8 (Continued)

Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program	CEQA Analysis
▪ Goal LU-9; Policy LU-9.4. Assure that the type and intensity of the land use shall be consistent with that of the immediate neighborhood. ▪ Goal LU-9; Policy LU-9.6. Allow development only with adequate physical infrastructure (e.g., transportation, sewers, utilities, etc.) and social services (e.g., education, public safety, etc.). Growth Management Element ▪ Goal GM-1. Water and sewer service shall be adequate to meet the health and safety needs of residents and businesses in Cerritos. ▪ Goal GM-1; Policy GM-1.3. Continue to maintain, improve, and replace aging water and sewer systems to ensure the provision of these services to all areas of the community. The general plan land use designation for the LCWRP is utility and flood control.		be temporarily impacted for 1 to 2 years. However, this temporary construction impact would not result in an incompatibility of adjacent land uses or an inconsistency with the type and intensity of the immediate neighborhood. Construction occurs throughout the general plan area on a regular basis and the intent of the policy is that the operation of land uses be compatible and consistent. For recreation impacts associated with construction at the LCWRP, see Chapter 17. ▪ The improvements to the LCWRP would allow for the maintenance of the physical wastewater infrastructure in the general plan area. These improvements are based on SCAG population forecasts through the year 2050. These population forecasts indicate the JOS service area population would increase from 5.1 million in 2008 to approximately 6.3 million by 2050. Therefore, the improvements to the LCWRP are in response to the SCAG projections of the JOS service area, including the general plan area. ▪ The improvements at the LBWRP would provide adequate sewer services to maintain and meet the needs of Cerritos. The program elements at the LCWRP would be **consistent** with the general plan land use designations. ▪ The improvements would be contained within the existing site of the facility and would not alter or change the purpose of the facility to provide wastewater treatment services to the JOS service area. ▪ For a discussion and analysis of direct impacts on the existing golf course at LCWRP associated with the construction of process optimization, refer to Chapter 17.
City of Cerritos Zoning Ordinance		
▪ The zoning for the LCWRP is open space.	▪ LCWRP	The process optimization would be **consistent** with the zoning for the LCWRP. ▪ The improvements at the LCWRP would be contained within the existing site of the facility. They would support the existing purpose of the LCWRP as a wastewater treatment plant and the future operation of the LCWRP. Therefore, the improvements would not conflict with the existing open space zoning.
Long Beach General Plan, 1989		
The two specific elements of the general plan of the city of Long Beach that are most relevant to the program elements are the Land Use Element and the Public Safety Element. Applicable goals and policies from both elements are summarized below.	▪ LBWRP	The program elements at the LBWRP would be **consistent** with the Long Beach General Plan. ▪ The improvements at the LBWRP would maintain the existing WRP and allow it to continue to treat wastewater in an efficient and safe manner. The improvements are preventing the deference of maintenance.

Table 12-8 (Continued)

Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program	CEQA Analysis
Land Use Element ▪ Goals for the Year 2000 – Facilities Maintenance. Long Beach will maintain its physical facilities and public rights-of-way at a high level of functional and aesthetic quality, manifesting the pride of the citizens in their city and ensuring that future generations need not bear the burden of deferred maintenance. Public Safety Element (reprint 2004) ▪ Public Safety Element Development Goals 6. Encourage transportation systems, utilities, industries, and similar uses to locate and operate in a manner consistent with public safety goals. The general plan land use designation for the LBWRP is open space/parks.		▪ The improvements at the LBWRP would be located within the existing site of the facility. It would not require an expansion of the facility boundary or operate inconsistently with the purpose of wastewater treatment at the facility. Therefore, the improvements encourage similar uses to be located and operated consistent with public safety goals. The program elements at the LBWRP would be **consistent** with the general plan land use designations. ▪ The improvements would be contained within the existing site of the facility and would not alter or change the purpose of the facility to provide wastewater treatment services to the JOS service area.
Long Beach Municipal Code		
▪ The zoning for the LBWRP is park.	▪ LBWRP	The program elements at the LBWRP would be **consistent** with the zoning for the LBWRP. ▪ The improvements at the LBWRP would be contained within the existing site of the facility. They would support the existing purpose of the LBWRP as a wastewater treatment plant and the future operation of the LBWRP. Therefore, the improvements would not conflict with the existing park zoning.
City of Carson General Plan, 2004		
The specific elements of the City of Carson General Plan that are most relevant to the project elements in the general plan are the land use element and the transportation and infrastructure element. Applicable goals from these elements are summarized below. ▪ Goal LU-6. A sustainable balance of residential and non-residential development and a balance of traffic circulation throughout the city. ▪ Goal LU-7. Adjacent land uses that are compatible with one another. ▪ Goal TI-8. Provide sustainable water and wastewater systems that meet the needs of the community. The general plan land use designation for the JWPCP is heavy industrial.	▪ JWPCP	The program elements at the JWPCP would be **consistent** with the City of Carson General Plan. ▪ The construction and operation of the digesters would be within the existing site of the facility. They would not conflict with surrounding neighborhood land uses. The operation of biosolids management would result in additional truck trips. However, these truck trips would continue to use I-110 to Sepulveda to Figueroa. This route is compatible with the industrial and commercial land uses along it. Therefore, improvements at the JWPCP would be compatible with adjacent land uses. ▪ Furthermore, the biosolids management program would support the existing use of the JWPCP as a wastewater treatment facility; therefore, it would not introduce a land use that is different or inconsistent with what is currently at the JWPCP. It would be separated from the surrounding land uses by a fence and landscaping. The program elements at the JWPCP would be **consistent** with the general plan land use designations. ▪ The improvements would be contained within the existing site of the facility and would not alter or change the purpose of the facility to provide wastewater treatment services to the JOS service area.

Table 12-8 (Continued)

Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Program	CEQA Analysis
City of Carson Zoning Ordinance		
▪ The JWPCP is zoned heavy manufacturing.	▪ JWPCP	The program elements at the JWPCP would be **consistent** with the zoning for the JWPCP. ▪ The improvements at the JWPCP would be contained within the existing site of the facility. They would support the existing purpose of the JWPCP as a wastewater treatment plant and the future operation of the JWPCP. Therefore, the improvements would not conflict with the existing heavy manufacturing zoning.

Joint Water Pollution Control Plant – Biosolids Management

Operation

The land use analysis of biosolids management at the JWPCP is included in Table 12-8. The biosolids management at the JWPCP would be consistent with all applicable land use plans, policies, and regulations.

The biosolids management locations summarized in Table 12-3 at the beginning of this chapter would continue to be used under the Clearwater Program. Each location may receive more biosolids under the Clearwater Program; however, an increase in biosolids would not impact the land use designations because these facilities currently exist and are permitted to use biosolids for various purposes. Furthermore, an increase in biosolids would not impact the surrounding land uses because these facilities currently exist in areas generally surrounded by agricultural or industrial land uses. Therefore, there would be no change between the existing baseline and future conditions under the Clearwater Program for land use. All existing management locations under the Clearwater Program would be consistent with their existing land use plans, policies, and regulations. As analyzed under separate environmental documentation, the Puente Hills landfill would be eliminated as a landfill co-disposal location (Sanitation Districts 2001). The removal of Puente Hills landfill as an available co-disposal location would not result in an inconsistency with existing land use plans, policies, and regulations.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. There would be no impacts.

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

12.4.3.2 Project

Impact LU-2. Would Alternative 1 (Project) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Alternative 1 (Project) would not create a conflict with applicable land use plans or policies. Alternative 1 project elements would be consistent with all applicable land use plans or policies. The CEQA and NEPA consistency analysis for each relevant land use plan, policy, or regulation and each project element are summarized in Table 12-9 and Table 12-10. As described in Table 12-4, the federal CZMA would apply to the offshore tunnel and the SP Shelf riser and diffuser area under Alternative 1, and compliance would be required as described in Section 12.4.1. Thus, the Corps would require a federal consistency determination from the California Coastal Commission as part of its permit process.

Table 12-9. Alternative 1 (Project) Consistency Analysis of State Land Use Plans, Policies, and Regulations

Summary of Applicable State Land Use Plans, Policies, and Regulations	Relevant Project Element or Location	CEQA/NEPA Analysis
California Tidelands Trust Act, 1911		
Submerged lands and tidelands within the Port of Los Angeles are held in trust by the city of Los Angeles and administered by the Los Angeles Harbor Department to promote and develop commerce, navigation, fisheries, and other uses of statewide interest and benefit, including commercial, industrial, and transportation uses; public buildings and public recreational facilities; wildlife habitat; and open space. The act also allows the establishment of harbors, commercial and industrial purposes, airports, highways, streets, bridges, belt line railroads, parking facilities, transportation and utility facilities, public buildings, and any other uses or purposes of statewide, as distinguished from purely local or private interest and benefit, which are in fulfillment of those trust uses and purposes described in this act.	▪ Wilmington to SP Shelf alignment ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site	The project elements, including Pasha Terminal and Fish Harbor, are **consistent** with the California Tidelands Trust Act. ▪ The project elements would establish new utility facilities. These facilities would consist of an offshore tunnel through the Port of Los Angeles to convey treated effluent from the JWPCP to the Pacific Ocean. These types of facilities are specifically identified by the California Tidelands Trust Act as being allowed in the port.
California Coastal Act, 1976, and Local Coastal Programs (Various)		
The California Coastal Act declared that the California Coastal Zone is a distinct and valuable resource of vital interest to all the people and exists as a balanced ecosystem. The Coastal Act outlines the following regarding the Port of Los Angeles and the coastal area: ▪ The port and its facilities are "one of the state's primary economic and coastal resources and…an essential element of the national maritime industry" (PRC Section 30701). ▪ The highest priority for any water or land area use within the port will be for developments that are completely dependent on such harbor water areas and/or harbor land areas for their operations (Sections 30001.5 (d), 30255, and 31260). ▪ The "highest priority [should be given] to the use of existing land space within harbors for port purposes, including, but not limited to, navigational facilities, shipping industries, and necessary support and access facilities" (Section 30708 (c)). ▪ The California Coastal Commission retains permanent coastal permit jurisdiction over development proposed on tidelands, submerged lands, and public trust lands.	▪ Wilmington to SP Shelf alignment ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site ▪ Existing ocean outfalls	The project elements, including Pasha Terminal and Fish Harbor, are **consistent** with the California Coastal Act. ▪ The project elements would convey treated effluent from the JWPCP to the Pacific Ocean. These types of utility facilities would not interfere with the California Coastal Act's priority for existing land space being used for port purposes. Construction of the project elements would last between approximately 6.5 to 8 years and would primarily consist of activities in the subsurface. The activities above surface at the shaft sites, Pasha Terminal, and Fish Harbor would be located at available locations within the Port of Los Angeles and would not conflict or prohibit other port uses including navigational facilities, shipping industries, and necessary support facilities. Marine transportation and vessel traffic generated by construction of project elements would comply with all applicable laws and regulations as discussed in the regulations associated with marine transportation in Chapter 19 and, therefore, would not conflict or prohibit other vessel traffic or the use of navigational facilities.

Table 12-9 (Continued)

Summary of Applicable State Land Use Plans, Policies, and Regulations	Relevant Project Element or Location	CEQA/NEPA Analysis
▪ Local governments must prepare a LCP for those parts of the coastal zone within their jurisdictions.		▪ Rehabilitation of the existing ocean outfalls would place new ballast rocks within the footprint of the existing ocean outfalls. The California Coastal Act does not prohibit ocean outfalls to be constructed or operated. In addition, it identifies that the State Water Resources Control Board and the California regional water quality control boards are the state agencies with primary responsibility for the coordination and control of water quality. The act requires a consistency determination to be conducted by the California Coastal Commission to issue a coastal development permit for activities associated with this project element. Therefore, the rehabilitation of the existing ocean outfalls would require a coastal development permit prior to construction and operation and would be consistent with the California Coastal Act.

Table 12-10. Alternative 1 (Project) Consistency Analysis of Regional and Local Land Use Plans, Policies, and Regulations

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Element or Location	CEQA/NEPA Analysis
Southern California Association of Governments Regional Comprehensive Plan and Guide		
See Table 12-6 for a description of the SCAG RCPG.	▪ All Alternative 1 project elements, including Pasha Terminal and Fish Harbor	All project elements, including Pasha Terminal and Fish Harbor, would be **consistent** with the SCAG RCPG. ▪ All project elements do not have direct impacts on mobility, prosperity, transportation, or the economy of the JOS service area; however, they do indirectly impact the livability and sustainability of the JOS service area. ▪ All project elements would provide for overall system reliability by allowing for the inspection, maintenance, repair, and replacement of the aging infrastructure of the existing onshore tunnel. ▪ All project elements would provide uninterrupted continuation of wastewater conveyance system-wide. This service continuity is important to the region so that residential, commercial, and industrial uses do not experience prolonged, negative disruptions in wastewater treatment service. ▪ Therefore, the construction and operation of the project elements would foster the livability of the JOS service area and promote sustainability for future generations.

Table 12-10 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Element or Location	CEQA/NEPA Analysis
Southern California Association of Governments Land Use Designations		
See descriptions of SCAG land use designations in Section 12.2.2.1.	▪ Wilmington to SP Shelf alignment	The tunnel alignment would be **consistent** with the SCAG land use designations. ▪ The tunnel alignment would be constructed between 100 and 200 feet bgs. It would be constructed within the public street right-of-way with the exception of a few hundred feet (see discussion of public rights-of-way and subsurface easements below). The tunnel alignment would not conflict with the land use designations on the surface.
Congestion Management Program		
See Table 12-6 in Section 12.3.3 for a description of the CMP.	▪ All Alternative 1 project elements including Pasha Terminal and Fish Harbor	All project elements, including Pasha Terminal and Fish Harbor, would be **consistent** with the CMP. ▪ The projects elements would not conflict with the CMP. A full analysis and determination associated with the CMP is included in Chapter 18 per the land use analysis program.
City of Carson General Plan, 2004		
The specific elements of the City of Carson General Plan that are most relevant to the project elements in the general plan are the Land Use Element and the Transportation and Infrastructure Element. Applicable goals from these elements are summarized below. ▪ Goal LU-6. A sustainable balance of residential and non-residential development and a balance of traffic circulation throughout the city. ▪ Goal LU-7. Adjacent land uses that are compatible with one another. ▪ Goal TI-8. Provide sustainable water and wastewater systems which meet the needs of the community. ▪ Policy TI-8.1. Continue to maintain, improve, and replace aging water and wastewater systems to ensure the provision of these services to all areas of the community. The general plan land use designation for the JWPCP East shaft site is heavy industrial.	▪ JWPCP East shaft site ▪ Wilmington to SP Shelf alignment	The project elements would be **consistent** with the goals of the City of Carson General Plan and the general plan land use designation. ▪ Currently there are residences and commercial uses to the east and south of the JWPCP East shaft site. The JWPCP East shaft site would be within the existing site of the JWPCP. It would support the existing use of the JWPCP as a wastewater treatment facility; therefore, it would not introduce a land use that is different or inconsistent with what is currently at the JWPCP. It would be separated from the surrounding land uses by a fence and landscaping. ▪ The tunnel alignment would be located below the ground surface and would not conflict with surface land uses. ▪ The project elements would provide wastewater system support to existing non-residential and residential land uses in the city of Carson.

Table 12-10 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Element or Location	CEQA/NEPA Analysis
City of Carson Zoning Ordinance		
The zoning for the JWPCP East shaft site is heavy manufacturing.	▪ JWPCP East shaft site	The JWPCP East shaft site would be **consistent** with the zoning of heavy manufacturing. ▪ The JWPCP East shaft site would be contained within the existing site of the JWPCP. It would support the existing purpose of JWPCP as a wastewater treatment plant and the future operation of the JOS service area. Therefore, the JWPCP East shaft site would not conflict with the existing heavy manufacturing zoning.
City of Los Angeles General Plan Framework Element, 2001		
The framework element chapter most relevant to the project elements is Chapter 9. The applicable goals and policies from this element are summarized below. ▪ Goal 9A. Adequate wastewater collection and treatment capacity for the city and in basins tributary to city-owned wastewater treatment facilities. ▪ Objective 9.2. Maintain the wastewater collection and treatment system, upgrade it to mitigate current deficiencies, and improve it to keep pace with growth as measured by the city's monitoring and forecasting efforts.	▪ Wilmington to SP Shelf alignment ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site	The project elements, including Pasha Terminal and Fish Harbor, would be **consistent** with the framework element of the city of Los Angeles. ▪ The Sanitation Districts' JWPCP treats a portion of the city's wastewater flow. ▪ The project elements would serve to maintain the wastewater collection and treatment system of the JOS service area and the JWPCP. The project elements would allow the continuation of service to certain areas of the city of Los Angeles. This continuation would allow the city-owned wastewater treatment facilities to provide adequate wastewater collection and treatment capacities for the parts of the city to which they provide services.
City of Los Angeles General Plan[1]		
The City of Los Angeles General Plan is comprised of community plans. Each local community of the city of Los Angeles has a community plan that governs the future development in that community through specific goals and policies. The community plans are intended to promote an arrangement of land uses, streets, and services which will encourage and contribute to the economic, social, and physical health, safety, welfare, and convenience of the people living and working in the community. The relevant community plans include: ▪ Wilmington-Harbor City Community Plan ▪ Port of Los Angeles Plan	▪ Wilmington to SP Shelf alignment ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site	The project elements, including Pasha Terminal and Fish Harbor, would be **consistent** with the City of Los Angeles General Plan. ▪ All applicable plans and policies associated with the community plans are discussed in this table within their respective community plan.

[1] The general plan also includes the Infrastructure System Element and the Public Services Element. However, these elements are currently unavailable from the city of Los Angeles; therefore, these elements are not evaluated in the draft EIR/EIS. Should they become available prior to the release of the final EIR/EIS, they will be included and appropriately analyzed.

Table 12-10 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Element or Location	CEQA/NEPA Analysis
City of Los Angeles General Plan – Wilmington-Harbor City Community Plan, 1999		
The Wilmington-Harbor City Community Plan is part of the City of Los Angeles General Plan. The plan recommends interagency coordination in the planning and implementation of projects occurring in the port to facilitate efficiency in port operations and to serve the interests of the adjacent communities. Issues identified in the plan include: ▪ Compatibility between residential and adjacent commercial and other uses ▪ Protection of residents from noxious environmental impacts of industrial activities ▪ Adequate buffering of industrial areas from nearby residential and commercial uses ▪ Truck traffic related to nearby industrial or container storage facilities invading local residential streets	▪ Wilmington to SP Shelf alignment	The project element would be **consistent** with the community of Wilmington-Harbor City goals and policies. ▪ The tunnel alignment would be below the ground surface and would be compatible with above ground surface residential or other land uses.
City of Los Angeles General Plan – Port of Los Angeles Plan, 1992		

The objectives of the Port of Los Angeles Plan were prepared through the joint efforts of the Harbor and Planning Department with input from other city departments as appropriate. The relevant objectives and policies include the following:
▪ Objective 4. To assure priority for water and coastal dependent development within the port while maintaining and, where feasible, enhancing the coastal zone environment and public views of, and access to coastal resources.
▪ Policy 7. Decisions to undertake individual and specific development projects within the harbor shall be based on considerations of alternative locations and designs in order to minimize adverse environmental impacts.
▪ Policy 16. Location, design, construction, and operation of all new or expanded development projects under the port's jurisdiction shall be based on the latest safety standards appropriate to the intended facility.
▪ Policy 18. Port development projects shall be consistent with the specific provisions of this plan; the certified Port of Los Angeles Master Plan; the California Coastal Act of 1976; and other applicable federal, state, county, and municipal laws and regulatory requirements.
▪ Policy 19. The following long-range preferred water and land uses shall guide future port development, as indicated by planning area.
  ▪ Area 5 Wilmington District: Non-hazardous liquid and non-hazardous dry bulk cargo (within the parameters of Policy No. 11), general cargo, commercial fishing operations, and port-related commercial and industrial uses
  ▪ Area 7 Terminal Island/Main Channel: Non-hazardous liquid and non-hazardous dry bulk cargo (within the parameters of Policy No. 11), general cargo, commercial fishing, port-related commercial and industrial uses, and institutional uses
	▪ Wilmington to SP Shelf alignment
	▪ Pasha Terminal
	▪ Fish Harbor area
	▪ TraPac shaft site
	▪ LAXT shaft site
	▪ Southwest Marine shaft site
		The project elements, including Pasha Terminal and Fish Harbor, would be **consistent** with the objectives and policies of the Port of Los Angeles Plan.
		▪ The tunnel alignment and shaft sites would not prohibit priority given to water and coastal dependent development at the port. The tunnel alignments would be located 100 to 200 feet bgs and would not interfere with water or coastal dependent development. During construction of the shaft sites and tunnel alignments, the shaft sites would consist of a total of less than 15 acres in the port's 4,300 acres. Furthermore, once operational, the locations would be returned to their existing conditions. The shafts would be converted into a below ground drop structure. A low profile or flush above ground means of access to the tunnel may be necessary for future operations and maintenance activities; however, they would not include manned or habitable structures.
		▪ The project elements are part of two alternatives being evaluated in the EIR/EIS. The other project elements are located outside the port. Furthermore, these six project elements are being fully evaluated and mitigation measures are proposed as necessary to reduce impacts to less than significant in the EIR/EIS. Therefore, alternative locations are being considered in order to minimize adverse environmental impacts.
		▪ The project elements would be constructed with state-of-the-art tunneling technology and construction methods. All

Table 12-10 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Element or Location	CEQA/NEPA Analysis
▪ Area 9 Terminal Island/Seaward extension: Hazardous and non-hazardous liquid bulk cargo (with relocation preference for existing hazardous liquid bulk facilities), hazardous and non-hazardous dry bulk cargo (with relocation preference for existing hazardous dry bulk facilities), general cargo, and industrial and institutional uses		construction crews would be specifically trained to work within tunnels and would have standard operating procedures in case of a tunneling-construction related emergency. The Sanitation Districts' contractor would prepare and abide by a Confined Space Entry Program addressing all potential physical and environmental hazards and contain procedures for safe entry into confined spaces, including, but not limited to the following: training of personnel; controlled access to the space; ventilation of the space; personal protective equipment; and rescue plan provision. Contractors would also be required to operate and maintain their own safety equipment. Tunneling operations must comply with strict California Occupational Safety and Health Administration (OSHA) and federal OSHA requirements. The contractor would prepare emergency and evacuation plans that all construction workers would be trained on and abide by. The emergency plan would outline duties and responsibilities of all personnel on the project during an emergency. The plan would include ventilation controls, firefighting equipment, rescue procedures, evacuation plans, and communications. Therefore, construction and operation of all the six project elements under the port's jurisdiction would be based on the latest safety standards appropriate to the intended elements. ▪ The project elements would be consistent with all applicable laws and regulations as discussed in this chapter and the regulations associated with other resource chapters (e.g., air quality, noise, etc.). Furthermore, the California Coastal Act, which governs much of the land development in the port, allows the development and maintenance of utilities, such as this project. ▪ The project elements would not interfere or prohibit the long-range preferred water and land uses, as indicated by planning area. The six project elements are part of a treated effluent conveyance system that would serve the JOS service area and allow the continued timely processing of wastewater. Although utilities are not specifically identified in the long-range plan for each of the planning areas, utilities ensure that the development of the area can take place as planned and support the development.

Table 12-10 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Element or Location	CEQA/NEPA Analysis
City of Los Angeles Municipal Code		
The zoning for Planning Area 5(a), the location of the TraPac shaft site and Pasha Terminal assembly area; Planning Area 9, the location of the LAXT shaft site; and Planning Area 7, the location of the Southwest Marine shaft sites, is heavy industrial. Among the multiple uses allowed in the heavy industrial zone of these various planning areas are public facilities, including fire stations, utility systems, and customs. The zoning for Planning Area 8, the location of the Fish Harbor area, is heavy industrial, which allows warehouses; open and enclosed storage facilities; marine services; and public facilities, including fire stations, utility systems, and custom houses.	▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site	The project elements, including Pasha Terminal and Fish Harbor, would be **consistent** with the zoning of these locations. ▪ The shaft sites at TraPac, LAXT, and Southwest Marine would support the wastewater utility system of the JOS service area. Utilities are allowed in heavy industrial zones. The activities at the Pasha Terminal would be consistent with heavy industrial activities currently conducted at the port. Furthermore, the activities at the Pasha Terminal would only occur during assembly and marine transit of the riser and diffuser pieces for a short duration.
Port of Los Angeles Master Plan With Amendments, 2002		
The objectives of the Port of Los Angeles Master Plan were prepared through the joint efforts of the Harbor and Planning Department with input from other city of Los Angeles departments. ▪ To consistently develop, expand, and alter the port in both the short-term period and long-range period for purposes of commerce, navigation, fisheries, port-dependent activities, and general public recreation consistent with the provisions of the California Coastal Act of 1979; the charter of the city of Los Angeles; and all other applicable federal, state, county, and municipal laws and regulations. ▪ The Port of Los Angeles Master Plan designation for the TraPac shaft site and the Pasha Terminal is general cargo. General cargo designations are generic and include container, unit, break-bulk, neo-bulk, and passenger facilities. ▪ The Port of Los Angeles Master Plan designation for the LAXT shaft site is dry bulk. Dry bulk designations are comprised of metallic ores, coal, chemicals and allied products, primary metal products, waste, and scrap materials and grains. ▪ The Port of Los Angeles Master Plan designation for the Southwest Marine shaft site is industrial. Industrial uses include shipbuilding/yard/repair facilities, light manufacturing/industrial activities, and ocean resource-oriented industries. ▪ The Port of Los Angeles Master Plan designation for the Fish Harbor area allows commercial fishing, recreation, industrial, liquid bulk, and other land uses.	▪ Wilmington to SP Shelf alignment ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site ▪ Pasha Terminal ▪ Fish Harbor area	The project elements, including Pasha Terminal and Fish Harbor, would be **consistent** with the Port of Los Angeles Master Plan. ▪ The project elements would be consistent with all applicable laws and regulations as discussed in this chapter and the regulations associated with other resource chapters (e.g., air quality, noise, etc.). Furthermore, the California Coastal Act, which governs much of the land development in the port, allows the development and maintenance of utilities, such as this project. ▪ The project elements would not interfere or prohibit the long-range preferred water and land uses, as indicated by the Port of Los Angeles Master Plan for each planning area. The six project elements are part of a wastewater system that would serve the JOS service area and allow the continued timely processing of wastewater. Although utilities are not specifically identified in the long-range plan for each of the planning areas, utilities ensure that the development of the area can take place as planned and support the development.

Table 12-10 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Element or Location	CEQA/NEPA Analysis
Port of Los Angeles Strategic Plan, 2006–2011		
The Port of Los Angeles Strategic Plan has 11 objectives, each with initiatives/action items that respond to the strategic plan's mission. The following objectives are relevant to the project elements: ▪ Ensure the port maintains and efficiently manages a diversity of cargo and land uses, maximizes land use compatibility, and minimizes land use conflicts.	▪ Wilmington to SP Shelf alignment ▪ Pasha Terminal ▪ Fish Harbor area ▪ TraPac shaft site ▪ LAXT shaft site ▪ Southwest Marine shaft site	The project elements, including Pasha Terminal and Fish Harbor, would be **consistent** with the Port of Los Angeles Strategic Plan. ▪ The project elements would be compatible with surrounding port land uses and would be appropriate for the existing activities of the port.
Public Right-of-Way and Subsurface Easements		
A subsurface easement provides the use of the space under the ground by an entity that does not actually own the property on the surface of the ground. ▪ For the tunnel alignment, both temporary construction easements and permanent easement will be centered on the centerline of the tunnel and will measure approximately 25 feet horizontal by 25 feet vertical (Parsons 2011). ▪ The tunnel alignments would require a minimum radius of up to 1,000 feet (Parsons 2011). ▪ The Wilmington to SP Shelf tunnel alignment would travel beneath approximately 9,435 square feet or 0.2 acre of private property. The alignments would travel beneath approximately 356,684 square feet or 8 acres of public property.	▪ Wilmington to SP Shelf alignment	The tunnel alignment would be **consistent** with the use of public street right-of-way and private easements. ▪ Public right-of-way is regularly used to place a variety of public utilities, including utilities such as the tunnel alignments. ▪ There is one privately owned parcel under the tunnel alignment: APN 7440-019-001. Easements would be obtained prior to construction as described in Table 12-6.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. There would be no impacts under CEQA.

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

NEPA Impact Determination

Construction and operation of Alternative 1 (Project) would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

12.4.3.3 Impact Summary – Alternative 1

Impacts on land use and planning analyzed in this EIR/EIS for Alternative 1 are summarized in Table 12-11 and Table 12-12. The proposed mitigation, where feasible, and the significance of the impacts before and following mitigation are also listed in the tables.

Table 12-11. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact LU-2. Would Alternative 1 (Program) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			
SJCWRP			
Plant Expansion	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation

Table 12-11 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
POWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LCWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LBWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
JWPCP			
Solids Processing	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Biosolids Management	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation

Table 12-12. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact LU-2. Would Alternative 1 (Project) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 12-12 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Wilmington to SP Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 12-12 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

12.4.4 Alternative 2

12.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

12.4.4.2 Project

The impacts for the onshore and offshore tunnels, and the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact LU-2. Would Alternative 2 (Project) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Alternative 2 (Project) would include the construction and operation of the PV Shelf riser and diffuser. As discussed in Table 12-9, the California Coastal Act does not prohibit ocean outfalls to be constructed or operated. In addition, the act identifies that the State Water Resources Control Board and the California regional water quality control boards are the state agencies with primary responsibility for the coordination and control of water quality. The act requires a consistency determination to be conducted by the California Coastal Commission to issue a coastal development permit for activities associated with the PV Shelf. Therefore, the PV Shelf riser and diffuser would require a coastal development permit prior to construction and operation and would be consistent with the California Coastal Act. The state and local land use consistency analysis is the same for all other project elements under Alternative 2 (Project) as for Alternative 1. For a detailed discussion of the consistency analysis, see Table 12-9 and Table 12-10 under Alternative 1.

CEQA Impact Determination

Construction and operation of Alternative 2 (Project) would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. There would be no impacts under CEQA.

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

NEPA Impact Determination

Construction and operation of Alternative 2 (Project) would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

12.4.4.3 Impact Summary – Alternative 2

Impacts on land use and planning for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 12-11. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 12-13. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 12-13. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact LU-2. Would Alternative 2 (Project) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 12-13 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

12.4.5 Alternative 3

12.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

12.4.5.2 Project

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as for Alternative 2 (Project).

Impact LU-2. Would Alternative 3 (Project) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Alternative 3 (Project) elements would not create a conflict with applicable land use plans or policies, with the exception of the Angels Gate shaft site. Construction activities at the Angels Gate shaft site would conflict with the land use designation and zoning and would conflict with the City of Los Angeles General Plan, the San Pedro Community Plan, and the San Pedro Specific Plan, which also serves as the local coastal plan. Therefore, construction impacts would be significant. Implementation of Mitigation Measure (MM) LU-2, which requires consistency between the construction activities and land use designation and zoning, would reduce construction impacts to less than significant. Once MM LU-2 was implemented and construction ceased, operations at the shaft site would not conflict with the land use designation and zoning. Furthermore, operation would not prohibit the appropriate use of Angels Gate Park or the overflow parking as open space upon completion of construction. Therefore, operation impacts would be less than significant. The CEQA and NEPA consistency analysis for each relevant land use plan, policy, or regulation and each project element is summarized in Table 12-14 and Table 12-15.

Table 12-14. Alternative 3 (Project) Consistency Analysis of State Land Use Plans, Policies, and Regulations

Summary of Applicable State Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
California Tidelands Trust Act, 1911		
Submerged lands and tidelands within the Port of Los Angeles are held in trust by the city of Los Angeles and administered by the Los Angeles Harbor Department to promote and develop commerce, navigation, fisheries, and other uses of statewide interest and benefit, including commercial, industrial, and transportation uses; public buildings and public recreational facilities; wildlife habitat; and open space. The act also allows the establishment of harbors, commercial and industrial purposes, airports, highways, streets, bridges, belt line railroads, parking facilities, transportation and utility facilities, public buildings, and any other uses or purposes of statewide importance, as distinguished from purely local or private interest and benefit, which are in fulfillment of those trust uses and purposes described in this act.	▪ Figueroa/Gaffey to PV Shelf (only the portion of the alignment under John S. Gibson Boulevard, where the tunnel would be constructed beneath land owned by the city of Los Angeles that is operated by the Port of Los Angeles)	The project elements would be **consistent** with the California Tidelands Trust Act. ▪ The project elements would establish new utility facilities. These facilities would consist of an offshore tunnel through the Port of Los Angeles to convey treated effluent from the JWPCP to the Pacific Ocean. These types of facilities are specifically identified by the California Tidelands Trust Act as being allowed in the port.
California Coastal Act, 1976, and Local Coastal Programs (Various)		
The California Coastal Act declared that the California Coastal Zone is a distinct and valuable resource of vital interest to all the people and exists as a balanced ecosystem. The Coastal Act outlines the following regarding the coastal area: ▪ The California Coastal Commission retains permanent coastal permit jurisdiction over development proposed on tidelands, submerged lands, and public trust lands. ▪ Local governments must prepare a LCP for those parts of the coastal zone within their jurisdictions.	▪ Figueroa/Gaffey to PV Shelf alignment ▪ Angels Gate shaft site ▪ PV Shelf riser and diffuser area ▪ Existing ocean outfalls	The Angels Gate shaft site during construction would be **inconsistent** with the California Coastal Act. ▪ The inconsistency of construction at the Angels Gate shaft site with applicable local coastal programs, such as the San Pedro Specific Plan, is discussed in the regional and local analysis (Table 12-15). The inconsistency with the local plan makes the Angels Gate shaft site inconsistent with the California Coastal Act because the act governs the local coastal programs. Construction of PV Shelf riser and diffuser and rehabilitation of the existing ocean outfalls would be **consistent** with the California Coastal Act. See Table 12-9 and Section 12.4.3.2 for additional details.

Table 12-15. Alternative 3 (Project) Consistency Analysis of Regional and Local Land Use Plans, Policies, and Regulations

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
Southern California Association of Governments Regional Comprehensive Plan and Guide		
See Table 12-6 in Section 12.3.3 for a description of the SCAG RCPG.	▪ All Alternative 3 project elements	All project elements would be **consistent** with the SCAG RCPG. ▪ See Table 12-10 under Alternative 1 for details regarding the consistency analysis that are applicable to the project elements under Alternative 3.
Southern California Association of Governments Land Use Designations		
See descriptions of SCAG land use designations in Section 12.2.2.1.	▪ Figueroa/Gaffey to PV Shelf alignment	The tunnel alignment would be **consistent** with the SCAG land use designations. ▪ The tunnel alignment would be constructed between 70 and 370 feet bgs. See Table 12-10 under Alternative 1 for details regarding the consistency analysis that are applicable to the tunnel alignment under Alternative 3.
Congestion Management Program		
See Table 12-6 in Section 12.3.3 for a description of the CMP.	▪ All Alternative 3 project elements	All project elements would be **consistent** with the CMP. ▪ The projects elements would not conflict with the CMP. A full analysis and determination associated with the CMP is included in Chapter 18 per the land use analysis program.
City of Los Angeles General Plan Framework Element, 2001		
See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of the framework element of the city of Los Angeles.	▪ Figueroa/Gaffey to PV Shelf alignment ▪ JWPCP West shaft site ▪ Angels Gate shaft site	The project elements would be **consistent** with the framework element of the city of Los Angeles. ▪ See Table 12-10 under Alternative 1 for details regarding the consistency analysis that are applicable to the project elements under Alternative 3. ▪ Although the Angels Gate shaft site would result in a land use inconsistency during construction, as described in this table in the City of Los Angeles General Plan, the San Pedro Community Plan, the San Pedro Specific Plan, and the zoning for the site, the operation of the shaft site and all project elements associated with Alternative 3 would further the intent of the framework to provide comprehensive wastewater facilities for the region and would be consistent with the framework under operation. Therefore, the Angels Gate shaft site is assumed to be consistent overall with the applicable goals and policies of the framework.

Table 12-15 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
City of Los Angeles General Plan		
See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of the City of Los Angeles General Plan.	▪ Figueroa/Gaffey to PV Shelf alignment ▪ JWPCP West shaft site ▪ Angels Gate shaft site	The project elements would be **consistent** with the City of Los Angeles General Plan, with the exception of the Angels Gate shaft site, which would be **inconsistent** before mitigation during construction, but **consistent** during operation because mitigation would be in effect. ▪ All applicable plans and policies associated with the community plans are discussed in this table within their respective community plan. ▪ The Angels Gate shaft site would result in an inconsistency during construction with the City of Los Angeles General Plan because of the inconsistency with the land use designation as defined by the general plan and described further in the San Pedro Community Plan and San Pedro Specific Plan.
City of Los Angeles General Plan – San Pedro Community Plan, 1982, and City of Los Angeles General Plan – San Pedro Specific Plan, 1990		
The San Pedro Community Plan emphasizes that public access, recreational opportunities, and visual qualities are to be maximized. The San Pedro Community Plan also includes the goals and policies associated with the San Pedro LCP specific plan. Development in the coastal zone is subject to the provisions of the California Coastal Act of 1976. San Pedro has a specific plan and approved coastal land use plan that guide the development in the coastal zone. Relevant goals and policies associated with the community plan and the specific plan include: ▪ Community Plan: Objective 5-1: To preserve existing open space resources and where possible develop new open space. ▪ Community Plan: Objective 6-2: To protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and man-made resources. The land use designation for the Angels Gate shaft site is open space. Open space designations on the plan map must conform to the definition of "Open Space Land" set forth in Article 10.5 of the state of California code and to the city's open space plan. Article 10.5 identifies open space as: ▪ Land for the preservation of natural resources; for the managed production of resources, including but not limited to, forest lands, rangeland, agricultural lands; for outdoor recreation, including but not limited to, areas of outstanding scenic, historic, and cultural value; areas particularly suited for park and	▪ Figueroa/Gaffey to PV Shelf alignment ▪ Angels Gate shaft site	The onshore tunnel alignment would be **consistent** with the community of San Pedro goals and policies. The Angels Gate shaft site would be **inconsistent** before mitigation during construction, but **consistent** during operation because mitigation would be in effect. ▪ The tunnel alignment would be below the ground surface and would not conflict with existing open space resources or degrade the overall quality of the coastal zone environment. ▪ The Angels Gate shaft site would temporarily limit the use of an existing open space resource during shaft site and tunnel construction activities, which would last approximately 3 years.[2] Furthermore, the construction activities at the shaft site would not act to maintain the overall quality of the coastal zone environment. It would temporarily introduce activities that are incompatible with the coastal zone and that generate visual impacts, noise impacts, and other impacts (for specific resource impacts, refer to the applicable resource chapters within this document). However, once operational, the site would be returned to existing conditions. Once construction is complete and the new ocean discharge system becomes operational, the Angels Gate shaft would

[2] The construction duration at Angels Gate Park only includes activities associated with the construction of the shaft site first and then all tunneling activities past the Angels Gate shaft site to the PV shelf. Because this is an access shaft site, tunneling would not occur northbound; therefore, a shorter time period would actually be needed for all construction activities when compared to shaft sites that are working shaft sites.

Table 12-15 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
recreation purposes; open space for public health and safety, including but not limited to, areas which require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs; and in support of the mission of military installations. ▪ The city's open space element identifies these definitions: enhances the economic base of the city; preserves or creates community scale and identity; and buffers or defines activity areas.		be converted into a below ground drop structure. A low profile or flush above ground means of access to the tunnel may be necessary for future operations and maintenance activities; however, they would not include manned or habitable structures. Therefore, under operating conditions, the Angels Gate shaft site would continue to support the preservation of open space resources and maintain the quality of the coastal zone environment. ▪ The construction of the Angels Gate shaft site would be inconsistent with the land use designation of open space. This designation does not include the construction of public facility uses associated with wastewater treatment. ▪ Operation of the Angels Gate shaft site would be consistent with the land use designation after implementation of MM LU-2 for construction. Furthermore, operation of the shaft site would not prohibit the use of Angels Gate Park or the shaft site area as overflow parking for Point Fermin Park.
City of Los Angeles General Plan – Wilmington-Harbor City Community Plan, 1999		
See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of the Wilmington-Harbor City Community Plan. The land use designation for the JWPCP West shaft site is public facilities.	▪ JWPCP West shaft site ▪ Figueroa/Gaffey to PV Shelf alignment	The project elements would be **consistent** with the community of Wilmington-Harbor City goals and policies and with the land use designation for the JWPCP West shaft site. ▪ The tunnel alignment would be below the ground surface and would be compatible with above ground surface residential or other land uses. ▪ The JWPCP West shaft site is located adjacent to I-110, the Wilmington Athletic Complex, and the Wilmington Boys and Girls Club. I-110 acts as a buffer between the shaft site and the residential homes to the west of I-110, and the Wilmington Athletic Complex and Wilmington Boys and Girls Club act as buffers between the shaft site and the residences to the west and southwest. Therefore, these buffers would protect residents from the activities at the shaft site and adequately buffer the industrial location from residents and commercial uses. ▪ However, during construction there would be a temporary incompatibility between the shaft site and the Wilmington Athletic Complex and Wilmington Boys and Girls Club. For specific resource impacts associated with air quality, noise, and traffic that would contribute to the temporary incompatibility, refer to the respective resource chapters (Chapter 5, Chapter 14, and Chapter 18). The incompatibility would last the approximately 5 years required to complete tunnel construction. But once operational, the shaft site

Table 12-15 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
		would house a surge tower approximately three stories tall that would not be incompatible with the existing Wilmington Athletic Complex and Wilmington Boys and Girls Club. The surge tower would support the wastewater treatment activities at the JWPCP and within the JOS service area. As discussed under the framework element of the city of Los Angeles analysis, this would support the policy to provide adequate wastewater service. ▪ Truck traffic associated with the JWPCP West shaft site construction would not utilize local residential streets. Trucks would access the shaft site from Figueroa Street via Lomita Boulevard, Pacific Coast Highway, or Sepulveda Boulevard. There are no residential uses along Sepulveda Boulevard and Figueroa. There are approximately 15 residential homes along the east side of Figueroa north of Pacific Coast Highway. These homes could be subject to an increase of truck traffic along Figueroa during construction activities; however, Figueroa is designated a Major Highway Class II, which is not a local residential street but rather a large divided street meant to accommodate significant flows of truck and vehicle traffic. ▪ The JWPCP West shaft site land use designation of public facilities includes the types of facilities and activities associated with wastewater treatment. Furthermore, the site has never historically been used as an open space area, but rather a staging and storage area for the Sanitation Districts.
City of Los Angeles General Plan – Port of Los Angeles Plan, 1992		
See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of the Port of Los Angeles Plan.	▪ Figueroa/Gaffey to PV Shelf alignment	The tunnel alignment would be **consistent** with the objectives and policies of the Port of Los Angeles Plan. ▪ See Table 12-10 under Alternative 1 for details regarding the tunnel alignment consistency analysis that are applicable to this tunnel alignment under Alternative 3.
City of Los Angeles Municipal Code		
The zoning for the JWPCP West shaft site is public facilities. The following uses are allowed in public facilities zones by a conditional use permit: ▪ Sewage treatment facilities, flood control facilities, sanitary landfills, covered reservoirs, etc. The zoning for the Angels Gate shaft site is open space. The following uses are allowed in open space zones: ▪ Parks and recreation facilities (Amended by Ord. No. 176,545, Eff. 5/2/05.); natural resource preserves for the managed production of resources; agricultural lands used for food and plant production; areas containing major	▪ JWPCP West shaft site ▪ Angels Gate shaft site	The JWPCP West shaft site would be **consistent** with the existing zoning. The Angels Gate shaft site would be **inconsistent** with existing zoning before mitigation during construction, but **consistent** during operation because mitigation would be in effect. ▪ The shaft site at JWPCP West would support the wastewater utility system of the JOS service area. Utilities and wastewater facilities are allowed within the public facilities zone.

Table 12-15 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
mineral deposits; marine and ecological preserves; sanctuaries and habitat protection sites; sanitary landfill sites that have received certificates of closure in compliance with federal and state regulations; public water supply reservoirs (uncovered) and accessory uses which are incidental to the operation and continued maintenance of such reservoirs; and water conservation areas (Section 12.04.05 City of Los Angeles Municipal Code).		▪ Public facilities such as wastewater utilities are not included as approved uses in an open space zone. Construction activities would temporarily restrict if not prohibit the use of the Angels Gate shaft site as overflow parking for Point Fermin Park. Construction would last approximately 3 years at Angels Gate. Implementation of MM LU-2 would require consistency between construction activities and the zoning. ▪ Operation of the Angels Gate shaft site would be consistent with the land use designation after implementation of MM LU-2 for construction. Furthermore, once construction is complete, operation of the shaft site would not prohibit the use of Angels Gate Park, Point Fermin Park, or overflow parking during operation.
Port of Los Angeles Master Plan With Amendments, 2002		
See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of the Port of Los Angeles Master Plan.	▪ Figueroa/Gaffey to PV Shelf alignment	The tunnel alignment would be **consistent** with the Port of Los Angeles Master Plan. ▪ See Table 12-10 under Alternative 1 for details regarding the tunnel alignment consistency analysis that are applicable to this tunnel alignment under Alternative 3.
Port of Los Angeles Strategic Plan, 2006–2011		
See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of the Port of Los Angeles Strategic Plan.	▪ Figueroa/Gaffey to PV Shelf alignment	The tunnel alignment would be **consistent** with the Port of Los Angeles Strategic Plan. ▪ See Table 12-10 under Alternative 1 for details regarding the tunnel alignment consistency analysis that are applicable to this tunnel alignment under Alternative 3.
Public Right-of-Way and Subsurface Easements		
A subsurface easement provides the use of the space under the ground by an entity that does not actually own the property on the surface of the ground. See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of tunneling construction requirements also applicable to Alternative 3. ▪ The Figueroa/Gaffey to PV Shelf alignment would travel beneath approximately 11,645 square feet or 0.3 acre of private property. The private properties are located where the alignment leaves John S. Gibson Boulevard to join with Gaffey Street. The Figueroa/Gaffey to PV Shelf alignment would travel beneath approximately 94,981 square feet or 2 acres of public property. ▪ Easements would be needed from the City of Los Angeles Department of Recreation and Parks for the use of the Angels Gate shaft site.	▪ Figueroa/Gaffey to PV Shelf alignment	The tunnel alignment would be **consistent** with the use of public street right-of-way and private easements. ▪ There are 11 privately owned parcels under the tunnel alignment: APN 7414 001 009, 7445 008 016, 7445 008 046, 7463 012 028, 7463 012 040, 7463 012 041, 7463 012 042, 7463 012 043, 7463 012 044, 7463 012 045, and 7465 009 023. ▪ See Table 12-10 under Alternative 1 for details regarding the tunnel alignment consistency analysis that are applicable to this tunnel alignment under Alternative 3. ▪ Easements would be obtained prior to construction as described in Table 12-6.

CEQA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) would conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. Impacts under CEQA would be significant before mitigation. Operation of Alternative 3 (Project) would result in less than significant impacts.

Mitigation

MM LU-2. Prior to construction, the existing land use designation and zoning will be amended as required through a general plan amendment, specific plan amendment, and/or zone change.

Residual Impacts

Construction occurs throughout the community plan and specific plan area on a regular basis, and the intent of the policy is that the operation of land uses be compatible and consistent. Once the land use amendment and zone change are performed, the operation of land uses would be compatible and consistent; therefore, operational impacts would be less than significant. Because the construction impacts would be temporary, residual impacts would be less than significant.

NEPA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) would conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 3 (Project) would result in less than significant impacts.

Mitigation

Implement MM LU-2.

Residual Impacts

Residual impacts would be less than significant as described under the CEQA impact determination.

12.4.5.3 Impact Summary – Alternative 3

Impacts on land use and planning for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 12-11. Impacts analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 12-16. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 12-16. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact LU-2. Would Alternative 3 (Project) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Angels Gate	CEQA Significant Impact During Construction	N/A	MM LU-2. Prior to construction, the existing land use designation and zoning will be amended as required through a general plan amendment, specific plan amendment, and/or zone change.	CEQA Less Than Significant During Construction
	NEPA Significant Impact During Construction	Indirect	MM LU-2	NEPA Less Than Significant Impact During Construction

Table 12-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

12.4.6 Alternative 4 (Recommended Alternative)

12.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

12.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years.

Impact LU-2. Would Alternative 4 (Project) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Alternative 4 (Project) would not create a conflict with applicable land use plans or policies, with the exception of the Royal Palms shaft site. Construction activities at the Royal Palms shaft site would conflict with the land use designation and zoning and would conflict with the City of Los Angeles General Plan, the San Pedro Community Plan, and the San Pedro Specific Plan. Therefore, construction impacts would be significant. Implementation of MM LU-2, which requires consistency between construction activities and land use designations and zoning, would reduce construction impacts to less than significant. Once MM LU-2 is implemented and construction is completed, operations at the shaft site would not conflict with the land use designation and zoning. Furthermore, operation of the shaft site would not prohibit the appropriate use of Royal Palms Beach as open space for recreational purposes. Therefore, operation impacts would be less than significant. The CEQA and NEPA consistency analysis for each relevant land use plan, policy, or regulation and each program element is summarized in Table 12-17 and Table 12-18.

Table 12-17. Alternative 4 (Project) Consistency Analysis of State Land Use Plans, Policies, and Regulations

Summary of Applicable State Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
California Coastal Act, 1976, and Local Coastal Programs (Various)		
The California Coastal Act declared that the California Coastal Zone is a distinct and valuable resource of vital interest to all the people and exists as a balanced ecosystem. The Coastal Act outlines the following regarding the Port and the Coastal Area: ▪ Local governments must prepare a LCP for those parts of the coastal zone within their jurisdictions.	▪ Royal Palms shaft site	The project element is **inconsistent** with the California Coastal Act before mitigation during construction, but **consistent** during operation because mitigation would be in effect. ▪ The inconsistency of the Royal Palms shaft site with applicable local coastal programs, such as the San Pedro Specific Plan, is discussed in the Regional and Local analysis (Table 12-18). The inconsistency with the local plan makes the Royal Palms shaft site inconsistent with the California Coastal Act because the act governs the local coastal programs.

Table 12-18. Alternative 4 (Project) Consistency Analysis of Regional and Local Land Use Plans, Policies, and Regulations

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
Southern California Association of Governments Regional Comprehensive Plan and Guide		
See Table 12-6 in Section 12.3.3 for a description of the SCAG RCPG.	▪ All Alternative 4 project elements	All project elements would be **consistent** with the SCAG RCPG. ▪ See Table 12-10 under Alternative 1 for details regarding the consistency analysis, which are applicable to the project elements under Alternative 4.
Southern California Association of Governments Land Use Designations		
See descriptions of SCAG land use designations in Section 12.2.2.1.	▪ Figueroa/Western to Royal Palms alignment	The tunnel alignment would be **consistent** with the SCAG land use designations. ▪ See Table 12-10 under Alternative 1 for details regarding the consistency analysis, which are applicable to the tunnel alignment under Alternative 4.
Congestion Management Program		
See Table 12-6 in Section 12.3.3 for a description of the CMP.	▪ All Alternative 4 project elements	All project elements would be **consistent** with the CMP. ▪ The projects elements would not conflict with the CMP. A full analysis and determination associated with the CMP is included in Chapter 18 per the land use analysis program.

Table 12-18 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
City of Rancho Palos Verdes General Plan, 1975		
The element most relevant to the project elements is the urban environment element. Applicable goals and policies from both these elements are as summarized: ▪ Infrastructure Policy 2: Prohibit the extension of any infrastructural component in to any area known to be unstable or of major environmental significance. ▪ Safety Policy 9: Ensure that services are provided to deal adequately with health and sanitation problems.	▪ Figueroa/Western to Royal Palms alignment	The Figueroa/Western to Royal Palms alignment would be **consistent** with the goals of the City of Rancho Palos Verdes General Plan. ▪ The tunnel alignment would travel south along Western Avenue, which is the boundary between the city of Rancho Palos Verdes and the city of Los Angeles community of San Pedro. ▪ The environmental impacts associated with all resources are discussed in each resource chapter of this document. There may be some significant and unavoidable impacts associated with construction that would not occur during operation. Mitigation measures are incorporated where necessary to reduce significant impacts to less than significant. Therefore, the infrastructure improvement would comply with Policy 2 for the purposes of this land use consistency analysis. ▪ The tunnel alignment would maintain the existing wastewater treatment system and would ensure that services deal adequately with sanitation.
City of Los Angeles General Plan Framework Element, 2001		
See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of the framework element of the city of Los Angeles.	▪ JWPCP West shaft site ▪ Figueroa/Western to Royal Palms alignment ▪ Royal Palms shaft site	The project elements would be **consistent** with the framework element of the city of Los Angeles. ▪ See Table 12-10 under Alternative 1 for details regarding the consistency analysis that are applicable to the project elements under Alternative 4. ▪ Although the Royal Palms shaft site would result in a land use inconsistency during construction, as described in this table, with the City of Los Angeles General Plan, the San Pedro Community Plan, the San Pedro Specific Plan, and the zoning for the site, the operation of the shaft site and all project elements associated with Alternative 4 would further the intent of the framework to provide comprehensive wastewater facilities for the region. Therefore, the Royal Palms shaft site is assumed to be consistent overall with the applicable goals and policies of the framework.
City of Los Angeles General Plan		
See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of the City of Los Angeles General Plan.	▪ JWPCP West shaft site ▪ Figueroa/Western to Royal Palms alignment	The project elements would be **consistent** with the City of Los Angeles General Plan, with the exception of the Royal Palms shaft site, which would be **inconsistent** before mitigation during construction, but **consistent** during operation because mitigation would be in effect.

Table 12-18 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
	▪ Royal Palms shaft site	▪ All applicable plans and policies associated with the community plans are discussed in this table within their respective community plan. ▪ The Royal Palms shaft site would result in an inconsistency with the City of Los Angeles General Plan during construction because of the inconsistency with the land use designation as defined by the general plan and described further in the San Pedro Community Plan and San Pedro Specific Plan.
City of Los Angeles General Plan – San Pedro Community Plan, 1982, and City of Los Angeles General Plan – San Pedro Specific Plan, 1990		
▪ See under Alternative 3 for a description of the San Pedro Community Plan and the San Pedro Specific Plan. ▪ The land use designation for Royal Palms Beach is open space. See under Alternative 3 for a description and definition of open space.	▪ Figueroa/Western to Royal Palms alignment ▪ Royal Palms shaft site	The onshore tunnel alignment would be **consistent** with the community of San Pedro goals and policies. The Royal Palms shaft site would be **inconsistent** before mitigation during construction, but **consistent** during operation because mitigation would be in effect. ▪ The tunnel alignments would be below the ground surface and would not conflict with existing open space resources or degrade the overall quality of the coastal zone environment. ▪ The Royal Palms shaft site would temporarily limit the use of an existing open space resource during construction activities, which would last approximately 2.5 years.[3] Furthermore, the construction activities at the shaft site would not act to maintain the overall quality of the coastal zone environment. It would temporarily introduce activities that are incompatible with the coastal zone and that generate visual impacts, noise impacts, and other impacts (for specific resource impacts, refer to applicable chapters within this document). However, once operational, the site would be returned to its existing conditions. Once operational, the Royal Palms shaft would be converted into a below ground drop structure. A low profile or flush above ground means of access to the tunnel may be necessary for future operations and maintenance activities; however, it would not include manned or habitable structures. Therefore, under operating conditions, the Royal Palms shaft site would continue to support the preservation of open space resource and maintain the quality of the coastal zone environment.

[3] The construction duration at Royal Palms Beach only includes activities associated with the initial construction of the shaft site and then the activities to connect the onshore tunnel with the offshore outfalls. Since this is an exit shaft site, tunneling would not occur northbound; therefore, a shorter time period would actually be needed for all construction activities when compared to shaft sites that are working shaft sites.

Table 12-18 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
		▪ The construction of the Royal Palms shaft site would be inconsistent with the land use designation of open space. This designation does not include the construction or operation of public facility uses associated with wastewater treatment. ▪ Operation of the Royal Palms shaft site would be consistent with the land use designation after implementation of MM LU-2 for construction. Furthermore, operation would not prohibit the use of Royal Palms Beach or the shaft site area for recreational and open space purposes.
City of Los Angeles General Plan – Wilmington-Harbor City Community Plan, 1999		
See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of the Wilmington-Harbor City Community Plan. The land use designation for the JWPCP West shaft site is public facilities.	▪ JWPCP West shaft site ▪ Figueroa/Western to Royal Palms alignment	The project elements would be **consistent** with the community of Wilmington-Harbor City goals and policies with the land use designation for the JWPCP West shaft site. ▪ See under Alternative 3 for details regarding the consistency analysis, which are applicable to the project elements under Alternative 4.
City of Los Angeles Municipal Code		
See Table 12-15 under Alternative 3 for a description of the zoning under the City of Los Angeles Municipal Code. The zoning for Royal Palms Beach is open space.	▪ JWPCP West shaft site ▪ Royal Palms shaft site	The JWPCP West shaft site would be **consistent** with the existing zoning. The Royal Palms shaft site would be **inconsistent** with the existing zoning before mitigation during construction, but **consistent** during operation because mitigation would be in effect. ▪ See Alternative 3 for details regarding the JWPCP West shaft site that are applicable to Alternative 4. ▪ Public facilities such as wastewater utilities are not included as approved uses in an open space zone. Construction activities would temporarily restrict if not prohibit the use of the Royal Palms shaft site for recreational purposes that support the open space zoning. Construction would last approximately 2.5 years. However, once constructed, the inconsistency does not restrict or prohibit the use of Royal Palms Beach during operation. Under operating conditions, the shaft site area would be returned to its existing condition. Therefore, it is a temporary inconsistency during construction activities.

Table 12-18 (Continued)

Summary of Applicable Regional and Local Land Use Plans, Policies, and Regulations	Relevant Project Elements	CEQA/NEPA Analysis
Public Right-of-Way and Subsurface Easements		
A subsurface easement provides the use of the space under the ground by an entity that does not actually own the property on the surface of the ground. ▪ See Table 12-6 in Section 12.3.3 and Table 12-10 under Alternative 1 for a description of tunneling construction requirements also applicable to Alternative 4. ▪ The Figueroa/Western to Royal Palms alignment would travel beneath approximately 53,555 square feet or 1 acre of private property, where the alignment leaves North Gaffey Street to join Capitol Drive and where the alignment leaves Capitol Drive to join Western Avenue. The Figueroa/Western to Royal Palms alignment would travel beneath approximately 219,281 square feet or 5 acres of public property. ▪ Easements would be needed from City of Los Angeles Department of Recreation and Parks for the portion of the tunnel alignment going beneath Harbor Park and from Los Angeles County for the portion of the tunnel alignment going into Royal Palms Beach.	▪ Figueroa/Western Royal Palms alignment	The project elements would be **consistent** with the use of public street right-of-way and private easements. ▪ There are six privately owned parcels under the tunnel alignment: APN 7414 001 009, 7412 022 008, 7412 022 009, 7442 023 019, 7445 010 041, and 7560 002 021. ▪ See Table 12-10 under Alternative 1 for details regarding the tunnel alignment consistency analysis that are applicable to this tunnel alignment under Alternative 4. ▪ Easements would be obtained prior to construction as described in Table 12-6.

CEQA Impact Determination

Construction at the Royal Palms shaft site for Alternative 4 (Project) would conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. Impacts under CEQA would be significant before mitigation. Operation of Alternative 4 (Project) would result in less than significant impacts.

Mitigation

Implement MM LU-2.

Residual Impacts

Construction occurs throughout the community plan and specific plan area on a regular basis, and the intent of the policy is that the operation of land uses be compatible and consistent. Once the land use amendment and zone change are performed, project operation would not conflict with the land use and zoning designations; therefore, operational impacts would be less than significant. Because the construction impacts would be temporary, residual impacts would be less than significant.

NEPA Impact Determination

Construction at the Royal Palms shaft site for Alternative 4 (Project) would conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 4 (Project) would result in less than significant impacts.

Mitigation

Implement MM LU-2.

Residual Impacts

Residual impacts would be less than significant as described under the CEQA impact determination.

12.4.6.3 Impact Summary – Alternative 4

Impacts on land use and planning for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 12-11. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 12-19. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 12-19. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact LU-2. Would Alternative 4 (Project) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Royal Palms	CEQA Significant Impact During Construction	N/A	MM LU-2. Prior to construction, the existing land use designation and zoning will be amended as required through a general plan amendment, specific plan amendment, and/or zone change.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM LU-2	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 12-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

12.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an EIR must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

12.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the SJCWRP, WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994). The program elements that are part of Alternative 5 (Program) would be consistent with the land use plans and policies described under Alternative 1 and in Table 12-8. Therefore, no impacts would occur.

12.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. Because construction would not take place under Alternative 5 (Project), there would be no construction inconsistencies with land use plans, policies, or regulations. As such, there would be no inconsistency with land use designations or

zoning at Angels Gate Park or Royal Palms Beach, as identified in Alternatives 3 and 4, respectively. Under Alternative 5 (Project), operating conditions of the JWPCP and the existing ocean discharge system would remain the same, and the Sanitation Districts would operate these facilities within the existing permitted capacities. Although an emergency discharge would be considered a violation of the JWPCP National Pollutant Discharge Elimination System permit and of the Clean Water Act, it would result in no impacts with regard to land use and planning.

12.4.7.3 Impact Summary – Alternative 5

Impacts on land use and planning for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 12-11, excluding process optimization. Note that the mitigation measures for Alternatives 1 through 4 (Program) are not applicable to Alternative 5 (Program). There would be no impacts on land use and planning for Alternative 5 (Project).

12.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.6 and 12.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

12.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

12.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

12.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Impacts for Alternative 6 would be the same as discussed under Alternative 5 (Project); therefore, there would be no impacts on land use and planning for Alternative 6.

12.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on land use and planning resulting from the construction and/or operation of program and/or project elements is provided in Table 12-20. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 12-20. Comparison of Significant Impacts and Mitigation for Land Use and Planning for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 3 (Project)			
Impact LU-2. Would Alternative 3 (Project) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			
Shaft Site – Angels Gate	CEQA Significant Impact During Construction	MM LU-2. Prior to construction, the existing land use designation and zoning will be amended as required through a general plan amendment, specific plan amendment, and/or zone change.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM LU-2	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 4 (Project)			
Impact LU-2. Would Alternative 4 (Project) conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			
Shaft Site – Royal Palms	CEQA Significant Impact During Construction	MM LU-2	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM LU-2	NEPA Less Than Significant Impact (Indirect) During Construction

Chapter 13
MARINE ENVIRONMENT (MARINE HYDROLOGY, WATER QUALITY, BIOLOGICAL RESOURCES, NOISE, AND PUBLIC HEALTH)

13.1 Introduction

This chapter describes existing conditions and regulations related to the marine environment within the study area for the Clearwater Program. There are a number of specific topics presented in this chapter that relate to the marine environment including oceanography, which describes physical processes that influence water mixing in the marine environment; water quality, which describes characteristics of the water of the nearshore marine environment; and sediment quality, which describes sediment characteristics and contamination. Local marine communities and the nearshore marine environment are influenced by water and sediment quality. These local and nearshore communities are analyzed to evaluate potential impacts from implementing the project and alternatives on local populations. Finally, public health covers potential human health risks associated with anthropogenic contaminants in local waters.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the marine environment impact analysis for each program element is summarized by alternative in Table 13-1. As shown in the table, none of the program-level elements are analyzed in the Preliminary Screening Analysis or this chapter because they are all located outside the marine environment. Therefore, the program is not discussed further in this chapter.

Table 13-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	N/A	
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	N/A	
Process Optimization	X	X	X	X	N/A	N/A	N/A	
WRP Effluent Management	X	X	X	X	X	N/A	N/A	

Table 13-1 (Continued)

Program Element	Alternative 1	2	3	4	5[a]	6[b]	Analysis Location PSA	EIR/EIS
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	N/A	
WRP Effluent Management	X	X	X	X	X	N/A	N/A	
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	N/A	
WRP Effluent Management	X	X	X	X	X	N/A	N/A	
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	N/A	
WRP Effluent Management	X	X	X	X	X	N/A	N/A	
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	N/A	
JWPCP								
Solids Processing	X	X	X	X	X	N/A	N/A	
Biosolids Management	X	X	X	X	X	N/A	N/A	
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 13-2.	

[a] See Section 13.4.7 for a discussion of the No-Project Alternative.
[b] See Section 13.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element carried forward as a project. The location of the marine environment impact analysis for each project element is summarized by alternative in Table 13-2. As shown in Table 13-2, construction and operation at the riser/diffuser areas (including the existing ocean outfalls) and the Royal Palms shaft site are analyzed in this chapter. All other project elements would be located on land and would not influence the marine environment; therefore, they are not discussed in the Preliminary Screening Analysis or this chapter.

Table 13-2. Impact Analysis Location of Project Elements by Alternative

Project Element	Alternative 1	2	3	4	5[a]	6[b]	Analysis Location PSA	EIR/EIS
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	N/A	
Wilmington to SP Shelf (offshore)	X				N/A	N/A	N/A	
Wilmington to PV Shelf (onshore)		X			N/A	N/A	N/A	
Wilmington to PV Shelf (offshore)		X			N/A	N/A	N/A	
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	N/A	
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	N/A	
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	N/A	

Table 13-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Shaft Sites								
JWPCP East	X	X			N/A	N/A	N/A	
JWPCP West			X	X	N/A	N/A	N/A	
TraPac	X	X			N/A	N/A	N/A	
LAXT	X	X			N/A	N/A	N/A	
Southwest Marine	X	X			N/A	N/A	N/A	
Angels Gate			X		N/A	N/A	N/A	
Royal Palms				X	N/A	N/A	C,O	C,O
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	-	C,O
PV Shelf		X	X		N/A	N/A	-	C,O
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	-	C,O

[a] See Section 13.4.7 for a discussion of the No-Project Alternative.
[b] See Section 13.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

13.2 Environmental Setting

13.2.1 Regional Setting

The physical and biological environmental characteristics presented in the regional setting are described in varying levels of detail. The regional setting encompasses the entire Southern California Bight (SCB). The SCB features are described in a general, but comprehensive, manner. The regional setting is described in more detail and sometimes summarizes historic and secondary reports because such sources frequently provide background data for the SCB that are not otherwise readily available. Use of this information occasionally results in inconsistent units of measure. These are explained as necessary. Unless otherwise described, the term nearshore environment refers to bottom sediments and marine waters shoreward of the shelf break at about 660 feet (200 meters) depth. Additional detail regarding the regional setting can be found in Appendix 13-A.

13.2.1.1 Location and Geography

The SCB is located in the eastern North Pacific Ocean and includes the area south of Point Conception, California, to north of Cabo Colnett, Baja California, Mexico, and east of the submerged Santa Rosa-Cortez Ridge (Dailey et al. 1993). The location of the SCB is shown on Figure 13-1 with the project area shown in the box inset. The coastline between Point Conception and the Mexican border trends from northwest to southeast and has a predominance of nearshore cliffs broken by coastal plains in the Oxnard-Ventura, Los Angeles, and San Diego areas. The coastline and coastal region are drained via short streams, which normally flow only during rainstorms.

FIGURE 13-1

Southern California Bight

Source: Sanitation Districts of Los Angeles County 2011, CaSIL 2001, Thomas Bros. 2011, ESRI 2011

The nearshore mainland shelf of the SCB is narrow and varies from less than 1 mile to more than 9 miles wide, with an average width of approximately 4 miles. There are 32 submarine canyons (12 are relatively large and named) that intersect the mainland shelf, making the basin and range submarine topography of the SCB relatively unique. The eight offshore islands influence water circulation and oceanographic characteristics along the mainland coast. The shelves of the SCB and submarine canyons are shown on Figure 13-1.

13.2.1.2 Oceanography

The physical processes of circulation that influence mixing in the marine environment include currents, waves, tides, and upwelling. Each is important to the oceanography of the SCB and is described in the following sections.

Currents

The California Current is the main current along the California coast. South of Point Conception it diverges, and one branch turns northward and flows inshore through the Channel Islands. This branch forms the inner edge of the Southern California Countercurrent. Surface speed in the countercurrent averages 2 to 4 inches per second (5 to 10 centimeters per second [cm/s]). The flow pattern is complicated by small eddies within the Channel Islands and fluctuates seasonally. The general pattern of surface water circulation off Southern California is shown on Figure 13-2 (Hickey 1992).

Waves

Waves over the mainland shelf are primarily locally derived and of short period. Although waves in the SCB include swell generated from distant areas, the Southern California coast is generally protected by the Channel Islands from swell generated outside of the coastal area (Hickey 1993; Allan Hancock Foundation 1965:34–41). High waves can form over the shelf when winds greater than approximately 34 knots (63 kilometers per hour) blow from the west, with recorded waves as high as 25 feet (7.6 meters) in the San Pedro Channel (Allan Hancock Foundation 1965).

Tides

Tides along the California coast are mixed semi-diurnal (daily), with two unequal highs and two unequal lows during each 25-hour period. In the eastern North Pacific Ocean, where the SCB is located, the tide wave rotates in a counterclockwise direction. As a result, flood (or rising) tide currents generally flow upcoast, and ebb (or falling) tide currents flow downcoast.

Upwelling

From February to October, northwesterly winds may induce large-scale offshore movement of surface water, resulting in the upward movement of deeper ocean waters near the coast (upwelling). This upwelled water is colder, more saline, lower in oxygen, and higher in nutrient concentrations than surface waters. Episodic upwelling results in a temporary reduction in water column density stratification and brings nutrient-rich water to the surface. Upwelling can change the water quality and biological productivity of the marine environment (described further in Section 13.2.1.3). Phytoplankton blooms are often associated with upwelling events, resulting in increased dissolved oxygen (DO) concentrations in surface waters and reduced DO levels in bottom waters (discussed further in Section 13.2.1.3).

13.2.1.3 Water Quality

Nearshore marine water quality in Southern California is primarily affected by climate, circulation, and biological activity, as well as by coastal effects such as run-off, wash-off of beaches by wave action, and

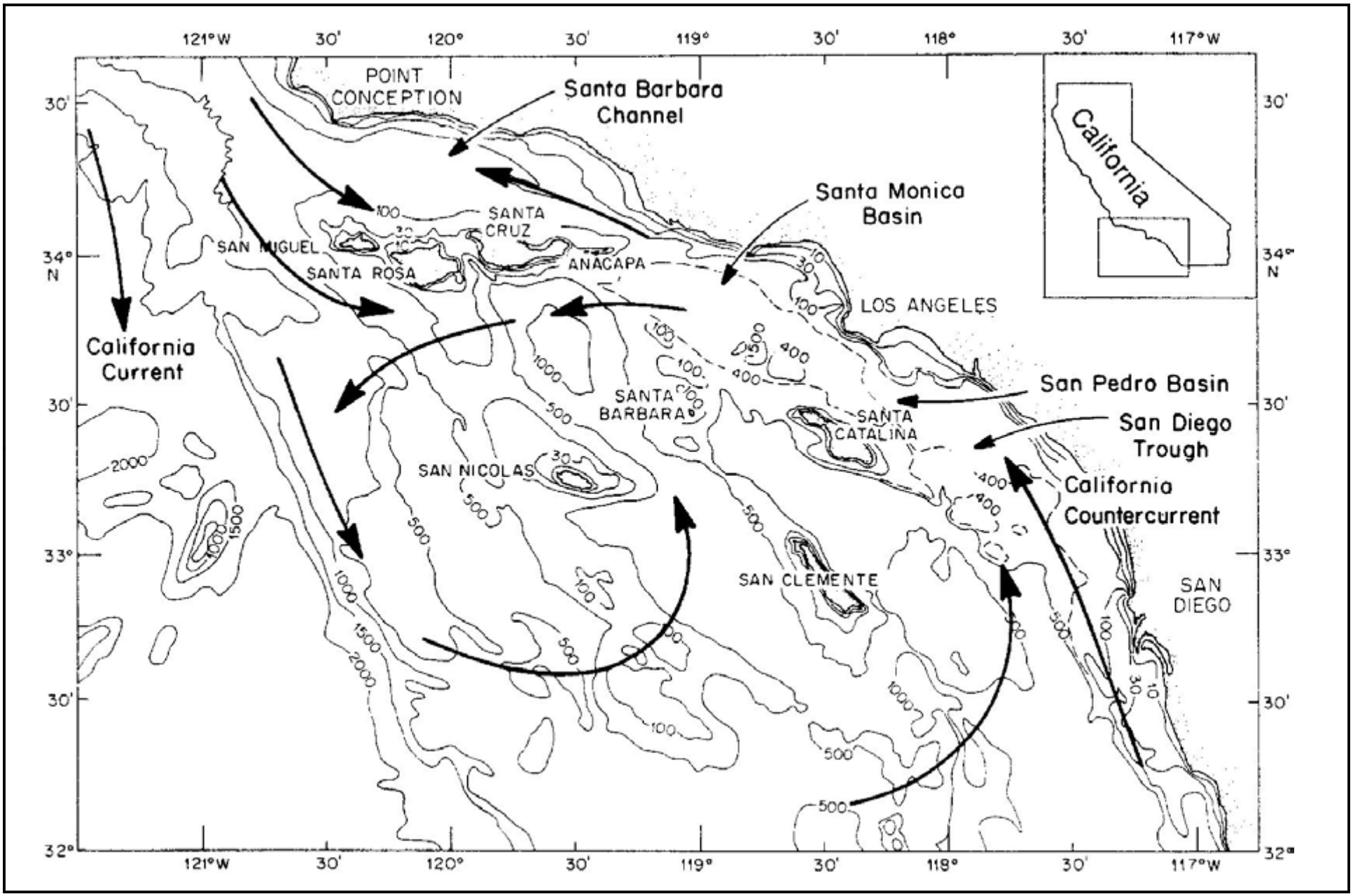


FIGURE 13-2

CLEARWATER Program

Circulation of Currents

Source: Hickey, B.M. 1992
Circulation over the Santa Monica San Pedro Basin and Shelf. Progress in Oceanography 30:37 115

resuspension of material from the seafloor by waves and currents. Factors such as temperature; salinity; density; hydrogen ion concentration (pH); and levels of DO, transparency, and nutrients in deeper offshore waters are generally influenced by large-scale oceanographic and meteorological conditions, while transparency, DO, pH, and nutrients in nearshore surface waters can also be influenced by local processes.

Temperature

Natural water temperature is defined by the California State Water Resources Control Board (SWRCB) as "the temperature of the receiving water at locations, depths, and times which represent conditions unaffected by any elevated temperature waste discharge." Natural surface temperatures in the SCB range from a maximum of about 22.6 degrees Celsius (°C) (72.7 degrees Fahrenheit [°F]) to a minimum of about 9.2°C (48.6°F) (Sanitation Districts 2010a:2.7, Table 2.1). On a daily basis, surface temperatures may vary by as much as 2°C (3.6°F) in summer and up to 1°C (1.8°F) in winter.

A thermocline is a layer in the water column where temperature changes more rapidly with depth than it does in the layers above or below. In natural waters, a thermocline is often formed when absorption of solar radiation penetrating the sea surface develops a stable stratification, separating the surface layer from the subsurface layer. In the SCB, reasonably sharp natural thermoclines have been reported in nearshore waters at typical depths of 30 to 49 feet (9 to 15 meters) during the summer months. In the fall, increased wave energy deepens the surface mixed layer, and pushes the thermocline deeper. Thermoclines are generally weaker and sometimes even absent during the winter (Allan Hancock Foundation 1965:40–41). Thermocline structure is highly variable, and the depth range of strongest temperature gradients may move several meters up or down within a few hours in response to tides and changes in wave energy.

Salinity

Salinity is a measure of the concentration of dissolved salts in water, and can be affected by several variables including freshwater runoff, direct rainfall, and evaporation. Throughout the marine waters of the SCB, salinity is fairly uniform, generally ranging from 33 to 34 parts per thousand (Allan Hancock Foundation 1965:56–79). Salinity generally increases with depth, but in the SCB vertical salinity distributions in the upper 33 to 131 feet (10 to 40 meters) are often inverted during summer and fall when temperature dominates the density layering, and surface waters evaporate. Slightly lower surface salinity can be expected near estuaries and embayments receiving freshwater discharges, such as the San Gabriel River Estuary and the Los Angeles-Long Beach Harbor, in the aftermath of rainfall events.

Density

Seawater density (σt) varies inversely with temperature and directly with salinity at a given pressure. Water temperature is the major density-influencing factor because salinity is relatively uniform in the SCB. The pycnocline (a region of rapid density variation within a small range in depth) generally forms in the early spring, with cooler, more saline water found near the bottom. In summer, as surface waters warm, the pycnocline becomes sharper and moves up in the water column, while evaporation leads to slightly higher salinities in surface waters. In fall, reduced solar warming and increased surface mixing push the pycnocline deeper in the water column, with the nearshore pycnocline generally disappearing in winter.

Dissolved Oxygen

The DO concentration of seawater is affected by physical, chemical, and biological variables. DO concentrations in the surface and near surface waters of the SCB range from approximately 5 to 13 milligrams per liter (mg/L) with typical values around 5.5 to 6.0 mg/L (Allan Hancock

Foundation 1965:56–79; Dailey et al. 1993); levels of DO at 330 feet (100 meters) may be as low as 2 to 3 mg/L (Sanitation Districts 2010a:2.7, Table 2.7). High DO concentrations may be the result of cool water temperatures (solubility of oxygen in water increases as temperature decreases), active photosynthesis, and/or mixing at the air-water interface (Sverdrup et al. 1942:189–203). Conversely, low DO concentrations may result from high water temperatures, high rates of organic decomposition, and/or extensive mixing of surface waters with oxygen-poor subsurface waters.

Hydrogen Ion Concentration

The pH of seawater in the SCB varies in response to physical, chemical, and biological influences. The pH of the upper 300 feet (100 meters) of the SCB varies from about 7.5 to 8.5 and decreases slightly with depth (Allan Hancock Foundation 1965:92). The pH of the world's oceans is widely believed to have been reduced by 0.1 pH units since the beginning of the industrial age as a result of anthropogenic carbon dioxide (CO_2) emissions (Doney et al. 2009:169–192). This is because the ocean assimilates the additional CO_2 directly reducing pH (Science 2010:1500–1501). This phenomenon, known as ocean acidification, while locally manifested, is global in nature.

Transparency and Turbidity

Transparency is the depth to which light penetrates water. If the ocean has high transparency it is clear; if it has low transparency it is turbid (cloudy or less clear). Turbidity can be caused by suspended solids from stormwater runoff, sediment resuspension, wastewater effluent discharges, dredging activities, construction activities, and offshore biological processes (e.g., phytoplankton blooms). Transparency of coastal waters is usually lower in spring due to runoff from coastal streams; it is higher (i.e., more clear) in fall when runoff is minimal.

Water transparency in the SCB, as measured by Secchi disk from the surface, typically ranges from 20 to 50 feet (6 to 15 meters) (SCCWRP 1973:128–130). In general there is a band of low transparency water within about 1 mile of the coast, with some variability based on shore features (Conversi and McGowan 1994:632–648).

Nutrients

The photosynthetic production of organic matter by phytoplankton is influenced by light and by the availability of nitrogen and phosphorus in a biologically usable form, usually ammonia or nitrate and phosphate. Nutrient concentrations change from day to day, with levels generally higher near their sources. The principal nutrient sources are upwelling of cooler, nutrient-rich bottom waters, biological processes that produce ammonium and urea, wastewater effluent disposal, stormwater runoff, and aerial deposition. Nitrogen, phosphorus, and silicates are the most common nutrients that limit phytoplankton growth in the ocean, with nitrogen being the most important in the SCB (Hardy 1993:246–247). The estimated mass emissions in SCB runoff flow of major nutrients for 1994 to 1995 are presented in Table 13-3. The Los Angeles and San Gabriel Rivers are estimated to discharge about one-third of all runoff in the SCB. However, mass emissions of nitrogen from runoff have been estimated to be only about 1 percent of the nitrogen contribution from upwelling (Kleppel 1980:194).

Table 13-3. Estimated Mass Emissions of Major Nutrients in the SCB (1994 to 1995)

Nutrient	SCB (total) (MT; geometric mean)[a,b]	Estimated Mass Emissions From Los Angeles and San Gabriel Rivers (MT; geometric mean)
Ammonia-Nitrogen	406	135
Nitrate-Nitrogen	1,940	647
Phosphate	558	186

[a] The geometric mean (the nth root [n = count of values] of the product of all values) is used to dampen the effect of very high or low values.
[b] Based on Ackermann and Schiff 2003 as cited in Sanitation Districts 2009a. Ackermann and Schiff used 1,000 kg; however, the SCB results were converted to metric tons; geometric mean to be consistent within the table.
MT = metric tons

13.2.1.4 Sediment Quality

Marine sediment characteristics are affected by both natural and anthropogenic influences. Tides, currents, and wave action all influence sediment grain size by suspending and transporting fine-grained material, resulting in coarser sediments in dynamic areas and finer sediments in areas of reduced currents and wave action. Coastal streams and rivers contribute sediments as well as contaminants to the marine environment, with variable influence from year-to-year depending on annual rainfall. In addition to influencing grain size, anthropogenic inputs may contribute contaminants to the environment, which can bind to sediments. Sediment characteristics and contaminants in the SCB are discussed in the following sections.

Sediment Characteristics

In the SCB, approximately 10 percent of the seafloor is composed of rocky substrate, while approximately 90 percent of the bottom is composed of soft sediments (CDFG 2009:9). On mainland shelves, beach sediments continue offshore, generally becoming finer with distance and depth (Emery 1960:198–208). Nearshore wave action and water motion keep fine material from settling. The trend toward finer sediments in the SCB was noted during regional monitoring in 2003, with a mean of 45 percent fine material (clay and silt sized particles) found throughout the SCB at midshelf depths of 100 to 400 feet (30 to 120 meters) (Schiff et al. 2006). However, sediments of different sizes and origins are distributed over the bottom of the shelf, influenced by current direction and velocity, wave exposure, proximity to sediment sources, and local seafloor topography.

Sediment Contaminants

Marine sediment can become contaminated with pollutants from a variety of industrial and domestic sources, including municipal wastewater discharges. Oil and gasoline combustion, for example, releases a variety of pollutants, including polycyclic aromatic hydrocarbons (PAHs), and metals, such as cadmium, copper, chromium, lead, mercury, and zinc. These and other metals are also found in paints, pigments, batteries, manufacturing, and protective coatings. In harbor areas, the use and maintenance of boats; anti-fouling boat paints; protective metal plating; and metal alloys in boats, piers, and docks can release such contaminants. Aerial fallout is also a diffuse and potentially large source of contaminants derived from other sources, and may include metals, chlorinated hydrocarbons, and PAHs (SCCWRP 1973:109–113; SCCWRP 1986). As these contaminants accumulate on the ground, they are washed into rivers by rainfall and are eventually deposited in the ocean. There are known areas of sediment contamination within the SCB. Specifically, chlorinated hydrocarbons, dichlorodiphenyltrichloroethane (DDT), polychlorinated biphenyls (PCBs), and other contaminants have been regularly identified in sediment sample results.

13.2.1.5 Biological Resources

The marine habitats of the SCB support a variety of biological resources and ecosystems. These resources have distinct characteristics including unique lifecycles, migration patterns, and mutual relationships with the physical processes described previously. Because there are large populations and a wide variety of biological resources within the SCB, the discussion that follows is organized around four broad categories: biological communities, protected species, marine migration, and marine habitat.

Biological Communities

Plankton

Plankton are organisms that drift passively with ocean currents or that are weakly motile. Planktonic organisms are divided into two types: phytoplankton (unicellular or colonial algal species) and zooplankton (small animals, up to about 10 centimeters long, that may spend all or some portion of their lives as planktonic organisms).

Phytoplankton

Phytoplankton occur in the upper reaches of the water column where sunlight can penetrate (the photic zone). They are usually most abundant near the bottom of the surface mixed layer, at depths with a favorable balance of light and nutrients.

Planktonic algal blooms may result in the production of toxins at levels that can bioaccumulate and cause illness and death in higher level animals and humans. Over the last two decades there has been growing worldwide concern regarding harmful algal blooms (HABs), which have become more frequent and severe in the SCB and elsewhere in the ocean. In Southern California coastal waters, domoic acid, produced by several species of the phytoplankton *Pseudo-nitzchia*, is the most commonly occurring and most harmful of the HAB-related toxins. *Pseudo-nitzchia* blooms in the SCB are generally seasonal, most often associated with spring upwelling events. Although it is an active research topic, no obvious link has been found between HABs and anthropogenic inputs, including ocean discharges. (Appendix 13-B.)

Zooplankton

Calanoid copepods dominate the nearshore zooplankton fauna of the SCB, with *Acartia*, *Paracalanus*, *Labidocera*, and *Calanus* the most commonly collected zooplankton. The invertebrate zooplankton in the nearshore waters of the SCB show seasonal trends, with highest abundances found between April and June, and the lowest between December and February.

Zooplankton include the planktonic life stages of some fish species, known as ichthyoplankton. Ichthyoplankton include fish eggs and fish larvae. They are generally well studied in the SCB, due in large part to the California Cooperative Oceanic Fisheries Investigations program, which has been investigating oceanic and biological aspects of the California Current system since the late 1940s. More than 150 ichthyoplankton taxa have been identified from within a few kilometers of the coast (Cross and Allen 1993:476–483). Nearshore ichthyoplankton concentrations have been documented around coastal power plant intake and discharges, but generally not in other nearshore areas.

Invertebrates

Invertebrates are those animals lacking vertebrae, or backbones. Marine invertebrates are categorized by their habitat: infauna, epibenthic, and pelagic.

Infauna Invertebrates

Infauna, or benthic invertebrates, are organisms that live within the sediments on the seafloor and include many types of organisms. Annelids, arthropods, and mollusks are the most abundant groups of infauna in the SCB. These organisms constitute prey for other invertebrates and fishes. Benthic organisms are reliable indicators of environmental stress and are used worldwide for assessing marine sediment conditions (Smith et al. 1998). Generally, a greater number of species represents a healthier, more stable environment, and studies suggest that decreasing diversity is one of the first indications of a stressed community.

Epibenthic Invertebrates

Epibenthic invertebrates (epifauna) live on the seafloor and are often larger, generally less common, and are spaced further apart than infaunal species. On the SCB mainland shelves, epifaunal invertebrates include sea stars, sea cucumbers, sand dollars, sea urchins, crabs, snails, and sea slugs. In shallow, sandy areas, Pacific sand dollars (*Dendraster excentricus*) may form dense beds. The white urchin (*Lytechinus pictus*) is the most abundant epifaunal invertebrate species found in SCB soft-bottom sediment at shelf depths (Thompson et al. 1993a; Allen et al. 2007; Thompson et al. 1993b). In rocky or hard-substrate areas different communities of epibenthic invertebrates are found. In relatively shallow depths these communities include sea urchins (*Strongylocentrotus* spp.), which can be found in very dense, single-species patches that limit the abundance of other species. Other species common to hard-substrate areas include sea stars, mussels *(Mytilus* spp.), sea anemones, rock scallops (*Crassadoma gigantea*), sponges, sea fans (*Muricea* spp.), and abalone (*Haliotis* spp.) (Thompson et al. 1993a). The black abalone (*Haliotis cracherodii*) and white abalone (*Haliotis sorenseni*) are two federally endangered invertebrates that live in the SCB; see Table 13-4 for additional information. Populations of other abalone (e.g., red, green pink) are depleted, and no fishery/landings of any abalone are allowed south of San Francisco. Shallow rocks (less than 98 feet) support mixed invertebrate and red, green, and brown algal turfs. Below depths of about 100 feet (30 meters) invertebrates dominate the hard-substrate areas, including encrusting bryozoans, cup corals, and sea fans, though some red algal turfs may still occur.

Pelagic Invertebrates

Pelagic invertebrates are those large or strong enough to swim against prevailing currents. In the SCB, these species include cephalopods such as California market squid (*Doryteuthis opalescens*) and occasionally Humboldt or jumbo squid (*Dosidicus gigas*). Pelagic red crab (*Pleuroncodes planipes*) may be locally abundant during warm water periods. Large medusae also belong in this category, some of which reach 3 feet in diameter.

Fishes

The mainland shelf of the SCB supports both demersal (fish species generally associated with the bottom, including soft- and hard-bottom associated fish) and pelagic (fish species generally associated with the water column) fish habitat. In the SCB, soft-bottom substrate (composed of sand, silt, and clay) is the dominant habitat on the mainland shelf. Bottom trawl surveys at shelf depths in the SCB have historically been dominated by scorpionfishes[1] and rockfishes, perches, and flatfishes (Allen et al. 2006:171–172). However, although hard substrate bottoms are the less abundant, they provide one of the most important habitats for fishes in the SCB (Cross and Allen 1993:506–518). About 30 percent of fish species in the SCB are associated with hard substrate, with more than 125 fish species (including bass, perch, and scorpionfishes) found on shallow reefs and kelp beds, and another 30 species (particularly rockfishes) associated with the deep reefs of slopes and canyon edges. Pelagic fish communities tend to be similar throughout the SCB, characterized by schooling fish species such as

[1] The plural "fishes" is used in this chapter when referring to two or more kinds of fish species, and the term "fish" is used when referring to two or more individual fish of the same species.

northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), and Pacific bonito (*Sarda chiliensis*) (Cross and Allen 1993:465–470; Allen et al. 2006:329–333).

The SCB supports a wide range of commercial and recreational fisheries for both fishes and invertebrates. Commercial target species include short-lived, fast-growing, and productive species such as northern anchovy, Pacific sardine, Pacific mackerel (*Scomber japonicus*), and jack mackerel (*Trachurus symmetricus*); slow-growing, long-lived demersal species such as flatfishes and rockfishes; and large, fast-growing migratory species such as yellowtail (*Seriola lalandi*), and swordfish (*Xiphias gladius*) (Cross and Allen 1993:463–465). Tunas, mackerel, bonito, and anchovy dominate the commercial fish landings.

Commercial fisheries also target several invertebrate species, including California market squid, California spiny lobster (*Panulirus interruptus*), rock crabs (*Metacarcinus* and *Romaleon* spp.), red sea urchin (*Strongylocentrotus franciscanus*), spot prawn (*Pandalus platyceros*), ridgeback prawn (*Sicyonia ingentis*), and sea cucumber (*Parastichopus* spp.) (Leet et al. 2001). Several other invertebrate species are taken as bycatch in other fisheries or support only a small commercial fishery.

Between 1995 and 2000, the three most numerous fish species taken by recreational shore fishers in Southern California were barred surfperch (*Amphistichus argenteus*), yellowfin croaker (*Umbrina roncador*), and opaleye (*Girella nigricans*) (Allen et al. 2006:580–586). Pier fishing during the same period yielded mostly Pacific mackerel, jacksmelt (*Atherninopsis californiensis*), and Pacific sardine. Species caught by private and party vessels were similar, with the private boat catch dominated by Pacific mackerel, barred sand bass (*Paralabrax nebulifer*), and yellowtail, and the party boat catch dominated by barred sand bass, Pacific mackerel, and kelp bass *(Paralabrax clathratus*). California spiny lobster is also an important recreational catch

Birds

Marine-associated birds within the SCB include a large variety of shorebirds and seabirds. Seabirds are adapted to life within the marine (oceanic) environment and include cormorants (*Phalacrocorax* spp.) and grebes (Podicipedidae). Shorebirds are adapted to life in the coastal (or seashore) environment and include species such as sanderlings (*Calidris alba*) and willets (*Tringa semipalmatus*). For a detailed description of the bird species found in the SCB, see Appendix 13-A. There are a number of federally and state-listed marine-related birds in the SCB including the federally endangered and state species of concern western snowy plover (*Charadrius alexandrinus nivosus*), and the state- and federally listed endangered California least tern (*Sterna antillarum browni*). See Table 13-4 for more information on these birds.

Marine Mammals

Marine mammals known to occur in the SCB include baleen whales, toothed whales (which include dolphins and porpoise), seals, sea lions, and sea otters.

Cetaceans (Whales, Dolphins, and Porpoises)

A variety of whale species are found within the SCB, either seasonally or throughout the year. Mysticeti (baleen) species include the gray whale (*Eschrichtius robustus*); North Pacific right whale *(Eubalaena japonica)*; minke whale (*Balaenoptera acutorostrata*); Bryde's whale (*Balaenoptera edenii*); and the federally endangered blue whale (*Balaenoptera musculus*), fin whale (*Balaenoptera physalus*), sei whale (*Balaenoptera borealis*), and humpback whale (*Megaptera novaeangliae*). Odontoceti (toothed) species include dwarf sperm whale (*Kogia simus*), pygmy sperm whale (*Kogia breviceps*), pilot whale (*Globicephala macrorhynchus*), killer whale (*Orcinus orca*), false killer whale (*Pseudorca crassidens*), and the federally endangered sperm whale (*Physeter macrocephalus*). There also are a variety of beaked whale species (which are also toothed species) along with common dolphin (*Delphinus delphis*),

bottlenose dolphin (*Tursiops truncatus*), northern right-whale dolphin (*Lissodephis borealis*), Risso's dolphin (*Grampus griseus*), pacific white-sided dolphin (*Lagenorhynchus obliquidens*), striped dolphin (*Stenella coeruleoalba*), spinner dolphin (*Stenella longirostris*), spotted dolphin (*Stenella attenuata*), rough-toothed dolphin (*Steno bredanensis*), Dall's porpoise (*Phocoenoides dalli*), and harbor porpoise (*Phocoena phocoena*). (For more information about the life history of these species pertinent to the SCB, see Appendix 13-A.)

Pinnipeds (Seals and Sea Lions)

Two pinnipeds, California sea lion (*Zalophus californianus californianus*) and Pacific harbor seal (*Phoca vitulina richardsi*), are common in the SCB. Other species include northern elephant seal (*Mirounga angustirostris*), found primarily around their rookeries on the California Channel Islands. Less common are northern fur seal (*Callorhinus ursinus*), the state- and federally threatened Guadalupe fur seal (*Arctocephalus townsendi*), and the federally threatened Steller sea lion (*Eumetopias jubatus*). Populations of the California sea lion, Pacific harbor seal, and northern elephant seal increased steadily in California waters throughout the second half of the 20th century, and are now relatively robust.

Fissipeds (Sea Otters)

Federally threatened southern sea otters (*Enhydra lutris nereis*) are occasionally seen in the SCB, and it is unknown if these are wanderers from the Central California population or from the San Nicolas colony. It is unlikely that this species would occur as residents in waters of the San Pedro Shelf (SP Shelf) or Palos Verdes Shelf (PV Shelf).

Reptiles

Reptiles known to occur in the SCB include one species of turtles, the leatherback turtle (*Dermochelys coriacea*), that is federally listed as endangered. There are also three species that are federally listed as threatened: the green turtle (*Chelonia mydas*), loggerhead turtle (*Caretta caretta)*, and olive ridley sea turtle (*Lepidochelys olivacea*) (Eckert 1993). All are known to occur in the nearshore waters off Southern California; however, the green turtle is the most commonly encountered nearshore in the SCB. (Eckert 1993.)

Protected Species[2]

Several species that occur in the SCB are protected by the state of California and/or the federal government through specific designations under the California and/or federal Endangered Species Act (ESA). These designations include sensitive, candidate for threatened or endangered listing, and threatened and/or endangered. State- and federally protected species that could potentially occur in nearshore coastal waters of the SCB are presented in Table 13-4. In addition to those protected species listed in the table, all marine mammals are protected under the Marine Mammal Protection Act (MMPA), and all birds that migrate are protected by the Migratory Bird Treaty Act (MBTA).

[2] For the purpose of brevity, this chapter uses "protected" to mean all species that are federally or state-listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern.

Table 13-4. Protected Fish and Wildlife Species in the Southern California Bight

Species	Protected Status	Range	Habitat/Location Found	Comments
Invertebrates				
Black abalone (*Haliotis cracherodii*)	FE	Cabo San Lucas, Mexico, north to Mendocino County, California.	Found in the intertidal zone to less than about 30 feet (9 meters) subtidally.	Overfishing and a fatal wasting disease called "withering syndrome" have caused a decline in the black abalone populations.
White abalone (*Haliotis sorenseni*)	FE	Point Conception in California to Punta Abreojos in Baja California, Mexico.	Found in subtidal rocky reefs at depths between 80 and 196 feet (24 and 60 meters).	Harvested in an intense commercial and recreational fishery that developed during the 1970s, which quickly peaked and crashed, closing in 1996; occasionally observed by recreational divers in deeper depths at the Channel Islands.
Fishes				
Southern steelhead (*Oncorhynchus mykiss irideus)* Southern California ESU	FE, SSC	Migratory, anadromous rainbow trout were historically common in coastal drainages north of San Luis Rey in San Diego County.	Winter-run steelhead occur along the California coast. They enter their home streams from November to April (depending on water flows) to spawn. Juveniles migrate to sea, usually in spring, and spend the next 1 to 3 years feeding. Submarine canyons and other regions of pronounced upwelling are thought to be particularly important for steelhead during El Niño events. (Swift et al.1993:113.)	Streambed modifications and flood control has resulted in habitat loss and the decline in the steelhead population.
Tidewater goby (*Eucyclogobius newberryi*)	FE, SSC	The northern population is found along coastal areas from Del Norte County (Smith River mouth area) to Los Angeles County. The southern population ranges from Los Angeles County to Aqua Hedionda Lagoon.	Small, bottom-dwelling fish endemic to California in some shallow coastal lagoons, stream mouths, and shallow areas of bays with low salinity water. Gobies are able to survive in low salinity waters (preferring approximately 5 parts per trillion salinity) but can tolerate higher salinities when moving between coastal streams and the ocean. They live approximately 3 years and feed on crustaceans and aquatic insects. Although tidewater gobies occur within the SCB, they are not present in the nearshore environment (Swift et al. 1993:129).	Habitat loss has caused the decline of the tidewater goby.

Table 13-4 (Continued)

Species	Protected Status	Range	Habitat/Location Found	Comments
Reptiles				
Green turtle (*Chelonia mydas*)	FT	Globally distributed in warm water; have been observed as far north as Alaska during warm water periods. Eggs are laid seasonally on tropical sandy beaches on both mainland and island sites. Individuals have high nesting site fidelity.	Most commonly encountered nearshore in the SCB; individuals are known to reside year round in the warm water effluent of the discharge channel of the South Bay Power Plant in San Diego Bay.	Harvesting of turtles and eggs, incidental take in other fisheries, rookery beach habitat loss, and general habitat degradation has caused the decline of the green turtle.
Leatherback turtle (*Dermochelys coriacea*)	FE	Have the most extensive range of all sea turtles; in the eastern Pacific have been reported as far north as Alaska and the Aleutian Islands and as far south as Chile. Nesting occurs on beaches in Mexico and other tropical locations.	Common off Mexico during the winter breeding season, but in the eastern North Pacific migrate north outside of the breeding season. Are most common in Southern California in summer when 18–20°C water moves north from Mexico, and farther north later in the summer.	Harvesting of turtles and eggs, incidental take in other fisheries, rookery beach habitat loss, and general habitat degradation has caused the decline of the Leatherback turtle.
Loggerhead turtle (*Caretta caretta*)	FT	Globally distributed in temperate, subtropical, and tropical waters. Nesting is restricted to warm temperate and subtropical beaches of the western Pacific.	May migrate in patterns related to availability of prey, particularly pelagic crabs in the eastern Pacific. Otherwise, they are found feeding on benthic invertebrates on hard-bottom substrate. Most records off California are of juveniles.	Harvesting of turtles and eggs, incidental take in other fisheries, rookery beach habitat loss, and general habitat degradation has caused the decline of the Loggerhead turtle.
Olive ridley turtle (*Lepidochelys olivacea*)	FT	Globally distributed in tropical waters. A predominantly tropical species, they are occasionally found as far north as Oregon.	Occasional visitors to Southern California, where they have been reported year-round. Migratory in the Pacific, traveling long distances from nesting sites in Mexico and Central America south to feeding grounds off Ecuador.	Harvesting of turtles and eggs, incidental take in other fisheries, rookery beach habitat loss, and general habitat degradation has caused the decline of the olive ridley turtle.

Table 13-4 (Continued)

Species	Protected Status	Range	Habitat/Location Found	Comments
Birds				
California least tern (*Sternula antillarum browni*)	FE, SE	The current breeding range for the species extends along the Pacific coast from the San Francisco Bay area to the tip of the Baja peninsula. Adults migrate south in autumn with winter populations noted along the Pacific coast in Baja California and mainland Mexico and as far south as Costa Rica and Panama.	Forage primarily in the shallow waters adjacent to nesting colonies, feeding exclusively on small fish (Atwood and Kelly 1984). Studies have suggested that they avoid feeding in normally favored locations when dredging operations create turbidity that affects visibility and/or prey availability. In Los Angeles County, least terns nest at Terminal Island and Venice Beach, while in Orange County they nest at Bolsa Chica in Huntington Beach.	Listed as endangered primarily because of human disturbance of its nesting habitat.
Bald eagle (*Haliaeetus leucocephalus*)	SE	Historic range from Alaska and Canada to northern Mexico.	Historically nested on all of the California Channel Islands; however, by 1960 were considered extinct on all of these islands. Between 1980 and 1986, 33 eagles were released from three "hacking" (artificial nest) platforms on Santa Catalina Island. Since 1989, the reintroduced population has been maintained through manipulations of eggs and chicks at each nest site, as well as through additional hacking efforts.	Causes of decline included shooting, egg collection, nest destruction, nest disturbance leading to desertion, removal of young from nests, trapping, and poisoning. As with the California brown pelican, egg-shell thinning from DDT exposure also led to their decline.
Western snowy plover (*Charadrius alexandrinus nivosus*)	FE, SSC	The Pacific Coast population includes both resident and migratory birds. They breed primarily on coastal beaches from southern Washington to southern Baja California, Mexico.	Preferred nesting habitats are sand spits, dune-backed beaches, beaches at creek and river mouths, and saltpans at lagoons and estuaries.	The Pacific Coast breeding population is threatened throughout its range by loss and disturbance of nesting sites. Poor reproductive success, resulting from human disturbance, predation, and inclement weather, combined with permanent or long-term loss of nesting habitat and encroachment of introduced European beachgrass and urban development, has led to a decline in active nesting colonies, as well as an overall decline in breeding and wintering populations.
Marbled murrelet (*Brachyramphus marmoratus*)	SE, FT	Breeding range extends from Bristol Bay, Alaska, to northern Monterey Bay in central California. Birds winter throughout the breeding range and also occur in small numbers off Southern California.	Rare in Southern California. The three areas where this species is concentrated in California are offshore and in the largest remaining blocks of old-growth coastal conifer forests.	Listed because of habitat loss, predation, fishing by catch, oil spills, marine pollution, and disease.

Table 13-4 (Continued)

Species	Protected Status	Range	Habitat/Location Found	Comments
Xantus' murrelet (*Synthliboramphus hypoleucus*)	ST	Historically nested on offshore islands in Southern California and Mexico. Winter distribution is from British Columbia, Canada, to Baja California, Mexico.	Primarily breeds on islands off Baja California, Mexico and is rarely seen in Southern California. The state's entire population is restricted to the Channel Islands area, with 95 percent of the northern race (*S. h. scrippsi*) breeding on Santa Barbara Island.	Listed because of habitat loss.
Mammals				
Guadalupe fur seal (*Arctocephalus townsendi*)	ST, FT	Breed only on Guadalupe Island off central Baja California, Mexico.	Males are now regularly seen on the San Miguel and San Nicolas Islands of Southern California. They are also occasionally sighted at sea in the SCB, and on beaches in central and northern California.	Hunted nearly to extinction in the 19th century.
Steller sea lion (*Eumetopias jubatus*)	FT	Found from central California north to the Bering Sea, the Aleutian Islands, and the Kamchatka Peninsula, and then south to northern Japan.	Historically common in Southern California. They are mainly found in coastal waters to the outer continental shelf; however they occur in deep oceanic waters in some parts of their range.	Historically, sporadically hunted.
Southern sea otter (*Enhydra lutris nereis*)	FT	Historically distributed in a nearly continuous band from Hokkaido, Japan, to central Baja California, Mexico. Four distinct remnants of three subspecies survive, with populations on the Kurile Islands to southeast Kamchatka Peninsula, Commander Islands, Aleutian Islands to Prince William Sound, Alaska, and central California.	Found in shallow, nearshore waters, often in kelp beds, and feed on or near the bottom. Prey includes benthic invertebrates such as abalones and sea urchins, rock crabs, other shellfish, cephalopods, and near-bottom fish.	From 1741 to 1911, hunted commercially, mostly for their pelts. Hunted nearly to extinction.
Blue whale (*Balaenoptera musculus*)	FE	Occur worldwide in circumpolar and temperate waters.	Summer feeding grounds are believed to be in the Gulf of Alaska and off the eastern Aleutian Islands. Blue whales migrate southward in fall, reaching waters off Baja California, Mexico, in October. In recent years blue whales have been becoming increasingly common in the SCB, particularly between June and September, which may reflect a shift in distribution rather than an increase in their population size.	Hunted commercially in the north Pacific until 1965; and as a result were listed as endangered. Ship strikes and increased anthropogenic noise are current concerns.

Table 13-4 (Continued)

Species	Protected Status	Range	Habitat/Location Found	Comments
Fin whale (*Balaenoptera physalus*)	FE	Widely distributed in temperate and subarctic waters.	Migrate northward from subtropical wintering grounds offshore of Mexico to the Gulf of Alaska and adjacent waters. Their summer distribution includes the Santa Rosa-San Nicolas Ridge and inshore waters to Anacapa and Santa Catalina Islands, though year-round aggregations are found along the southern and central California coast. Their migration through the SCB follows the continental slope.	Hunted commercially in the north Pacific until 1987. Ship strikes and increased anthropogenic noise are current concerns.
Humpback whale (*Megaptera novaeangliae*)	FE	Occur worldwide. In the North Pacific, they range in summer from Arctic waters south to Japan and central California; in winter they range from Mexico, Central America, Hawaii, southern Japan, and the Philippines.	Present in the SCB from March through June and from September through December. In these months, however, sightings are uncommon and widespread. Migrants transiting the SCB follow a more inshore corridor than blue, fin, or sei whales.	Hunted commercially in the north Pacific until 1987. Ship strikes, entanglement in fishing gear, and increased anthropogenic noise are current concerns.
North Pacific right whale *(Eubalaena japonica)*	FE	In the eastern North Pacific, range from the Bering Sea south to central Baja California, Mexico. They are likely to be found at latitudes north of 50°N during summer.	Rare in Southern California. Seasonal north–south migrations, but with much less coherence and regularity than some other whale species, such as gray and humpback whales.	Heavily exploited by commercial whalers through the 1960s. Ship strikes and entanglement in fishing gear are current concerns.
Sei whale (*Balaenoptera borealis*)	FE	Occur worldwide, but are considered more boreal (northerly) in distribution than other balaenopterids.	Offshore species that do not appear to be associated with coastal features. Considered rare in California waters.	Hunted commercially in the north Pacific until 1972. Ship strikes and increased anthropogenic noise are current concerns.
Sperm whale (*Physeter macrocephalus*)	FE	Found in temperate and tropical pelagic waters south of about 45°N latitude.	Thought to be abundant in waters directly offshore the SCB. Common year-round off central and northern California.	At least 436,000 were taken in the North Pacific between 1800 and the end of commercial whaling for the species in 1987. Increased anthropogenic noise is a current habitat concern.
Delisted Species				
Birds				
California brown pelican (*Pelecanus occidentalis californicus*)	SE delisted (6/3/09), FE delisted (12/17/09): Recovered	The current breeding distribution of the California subspecies ranges from the Channel Islands of Southern California southward. Between breeding seasons,	Plunge divers, feeding primarily on fish in open waters nearshore and in harbors, with northern anchovy forming a significant portion of their diet. Feeding flocks generally include 10 to 50 birds, and occur within 12 miles) of shore in waters less than 330 feet (100 meters) deep. Feeding	Listed as endangered because of its low reproductive success, attributed to egg-shell thinning as a consequence of pesticide contamination. The population largely recovered following the prohibition on the use of DDT.

Table 13-4 (Continued)

Species	Protected Status	Range	Habitat/Location Found	Comments
		may range from as far north as Vancouver Island, British Columbia, and south to Central America.	pelicans have been sighted at sea off Southern California as far as Cortes Bank (about 80 miles west of San Diego) and 55 miles) offshore off central California. Found along the coast year round, but their numbers increase with the influx of post-breeding birds in summer.	
Bald eagle (*Haliaeetus leucocephalus*)	FT delisted (8/18/07)	Historic range from Alaska and Canada to northern Mexico.	Historically nested on all of the California Channel Islands; however, by 1960 were considered extinct on all of these islands. Between 1980 and 1986, 33 eagles were released from three "hacking" (artificial nest) platforms on Santa Catalina Island. Since 1989, the reintroduced population has been maintained through manipulations of eggs and chicks at each nest site, as well as through additional hacking efforts.	Causes of decline included shooting, egg collection, nest destruction, nest disturbance leading to desertion, removal of young from nests, trapping, and poisoning. As with the California brown pelican, egg-shell thinning from DDT exposure also led to their decline.
Mammals				
Gray whale (*Eschrichtius robustus*)	FE delisted (6/15/94): Recovered	Bering Sea, Alaska, to the Gulf of California, Mexico.	The Eastern Pacific gray whale population migrates from feeding grounds in Arctic seas to mating and calving grounds in coastal lagoons of Baja California and the Gulf of California and back again. Southbound gray whales begin arriving in the SCB in mid-December, and some small portion is known to calve in SCB waters. Calving takes place from January through March, after which the northbound migration begins. Gray whales feed only occasionally during their migration, though observations of nearshore feeding in the SCB during migration have been reported.	Hunted extensively during the 19th century; hunted nearly to extinction. Ship strikes, entanglement in fishing gear, and increased anthropogenic noise are current concerns.

E = Endangered
F = Federal
S = State (California)
SSC = State species of concern
T = Threatened
Source: CDFG 2010a

Marine Migration

A number of marine species migrate within the SCB, with migration patterns varying by species and generally seasonal, driven by lifecycle, availability of food, and reproductive needs. Several notable marine species that migrate through the SCB are gray, blue, and fin whales; sea turtles; and several species of fish.

Gray Whale

Each year the majority of the Eastern Pacific gray whale population migrates from feeding grounds in Arctic seas to mating and calving grounds in the coastal lagoons of Baja California and the Gulf of California and back again. From late fall through winter, gray whales travel south from the Arctic to Mexico, usually leaving the Bering Sea between late October and early January (Bonnell and Dailey 1993). The southbound gray whales begin arriving in the SCB in mid-December, and some small portion is known to calve in SCB waters (Dohl et al. 1981). Off northern and central California, the majority travel within a few kilometers of the shoreline (Bonnell and Dailey 1993; MBC 1989). Calving takes place from January through March, after which the northbound migration begins.

Blue and Fin Whales

The distribution of blue and fin whales in the SCB is similar, as are their seasons of highest abundance. They are most prevalent from June through October (Bonnell and Dailey 1993). Blue whales migrate southward in fall, reaching waters off Baja California in October. Their migration through the SCB follows the continental slope. Their calving grounds are unknown, but calving may occur far offshore or in more southern subtropical waters. In recent years, blue whales have become increasingly common in the SCB, particularly between June and September, which may reflect a shift in distribution rather than an increase in their population size (Barlow 1994; Barlow and Forney 2007). Eastern stock fin whales migrate northward from subtropical wintering grounds (assumed to be offshore Mexico) to the Gulf of Alaska and adjacent waters. Their summer distribution includes the Santa Rosa-San Nicolas Ridge and inshore waters to Anacapa and Santa Catalina Islands, though year-round aggregations are found along the southern and central California coast (Bonnell and Dailey 1993; Carretta et al. 2009). As with the blue whale, the fin whale migration through the SCB follows the continental slope.

Sea Turtles

Green turtle, loggerhead turtle, leatherback turtle, and olive ridley sea turtle all have broad, international geographic ranges and are highly migratory. However, they do not engage in mass migrations and the limited available data on their migratory behavior indicates that migration routes are pelagic, located far offshore. For example, tracking studies indicate that leatherback sea turtles nesting in the western Pacific migrate across the ocean foraging, and some aggregate off the coast of California to forage on jellyfish (NMFS and USFWS 2007). Tracking studies of olive ridley sea turtles in the Pacific Ocean offshore of Central America indicate that they move primarily into the deep offshore waters to forage, and similar results have been obtained for loggerhead turtles in southern Baja California (Sea Turtle Conservancy 2010).

Fishes

Migration in marine fish species is common and usually related to feeding or reproduction (Cross and Allen 1993:462, 474). Dover sole migrate offshore in winter to reproduce and inshore in summer to feed in the SCB. California scorpionfish aggregate offshore to traditional spawning grounds from May to August in the SCB. Pelagic fish species such as albacore migrate into the SCB in spring and summer to feed in productive coastal waters.

Marine Habitat

Marine habitat within the SCB includes that which has regulatory agency designation and biological habitat of importance to the ecosystem. Habitat is either pelagic or can include both the type of substrate (either soft bottom or hard bottom) and the community of species that relies on the type of substrate. The three marine habitats discussed in this section are essential fish habitat (EFH), marine protected areas, and marine vegetation. Marine protected areas, and seabird and shorebird nesting areas and rookeries, are described in more detail in Appendix 13-A.

Essential Fish Habitat

EFH is managed under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The project is located in waters designated as EFH for two Fishery Management Plans (FMPs): the Coastal Pelagics FMP (6 species), and the Pacific Groundfish FMP (89 species). EFH for coastal pelagics is defined as all marine and estuarine waters from the California, Oregon, and Washington shorelines offshore to the limits of the Exclusive Economic Zone (EEZ), which is 230 miles from shore and above the thermocline. The habitat for coastal pelagics is primarily above the thermocline. For Pacific groundfishes, EFH includes all waters off Southern California between mean higher high water and depths less than or equal to approximately 11,500 feet (3,500 meters). The Pacific Groundfish FMP also considers EFH to include areas where saltwater intrudes into a river. Lastly, specific habitat areas of particular concern for groundfishes have been identified and include estuaries, canopy kelp, seagrass, rocky reefs, and other specific areas (such as seamounts). An EFH assessment is presented in Appendix 13-C.

Marine Protected Areas

A marine protected area (MPA), as defined in Section 2852(c) of the California Fish and Game Code, "means a named, discrete geographic marine or estuarine area seaward of the high tide line or the mouth of a coastal river, including any area of intertidal or subtidal terrain, together with its overlying water and associated flora and fauna that has been designated by law, administrative action, or voter initiative to protect or conserve marine life and habitat." These include state marine reserves, state marine parks, marine conservation areas, ecological reserves, state marine refuges, and state parks. Areas of special biological significance (ASBS) were established with SWRCB Resolution No. 74-28 to provide protection to species or communities in these areas from water quality degradation. The state MPA near the riser and diffuser areas is shown on Figure 13-3.

Marine Vegetation

Marine vegetation varies depending on the depth of water and the nearshore and offshore environments. In nearshore areas, from the shore to the edge of the photic zone, hard-bottom habitats provide substrate for the attachment of marine algae and plants. In shallow rocky areas, green algae (*Chlorophyta*), more common in the intertidal, are mostly small to moderate in size. Subtidally, red algae (*Rhodophyta*) generally form a low turf or understory, whereas brown algae (*Phaeophyta*) are generally larger and form an overstory. Eelgrass (*Zostera* spp.) is found in bays, estuaries, and in sheltered areas along the open coast of Southern California (Dawson and Foster 1982:158), although the majority of eelgrass is found in bays and estuaries (Bernstein et al. 2011:8–15).

In relatively shallow rocky or hard-bottomed areas, feather-boa kelp *(Egregia menziesii*) is dominant nearshore, while giant kelp *(Macrocystis pyrifera*) dominates deeper areas of reefs down to about 66 feet (20 meters). Palm kelp (*Pterygophora californica*) and other large upright kelps increase diversity by attracting and providing habitat for an additional assemblage of organisms. Surfgrass (*Phyllospadix* spp.), a flowering plant, occasionally forms dense beds in rocky areas and, although more common in the low intertidal, can be found to depths of approximately 50 feet (15 meters). In some areas, bull kelp

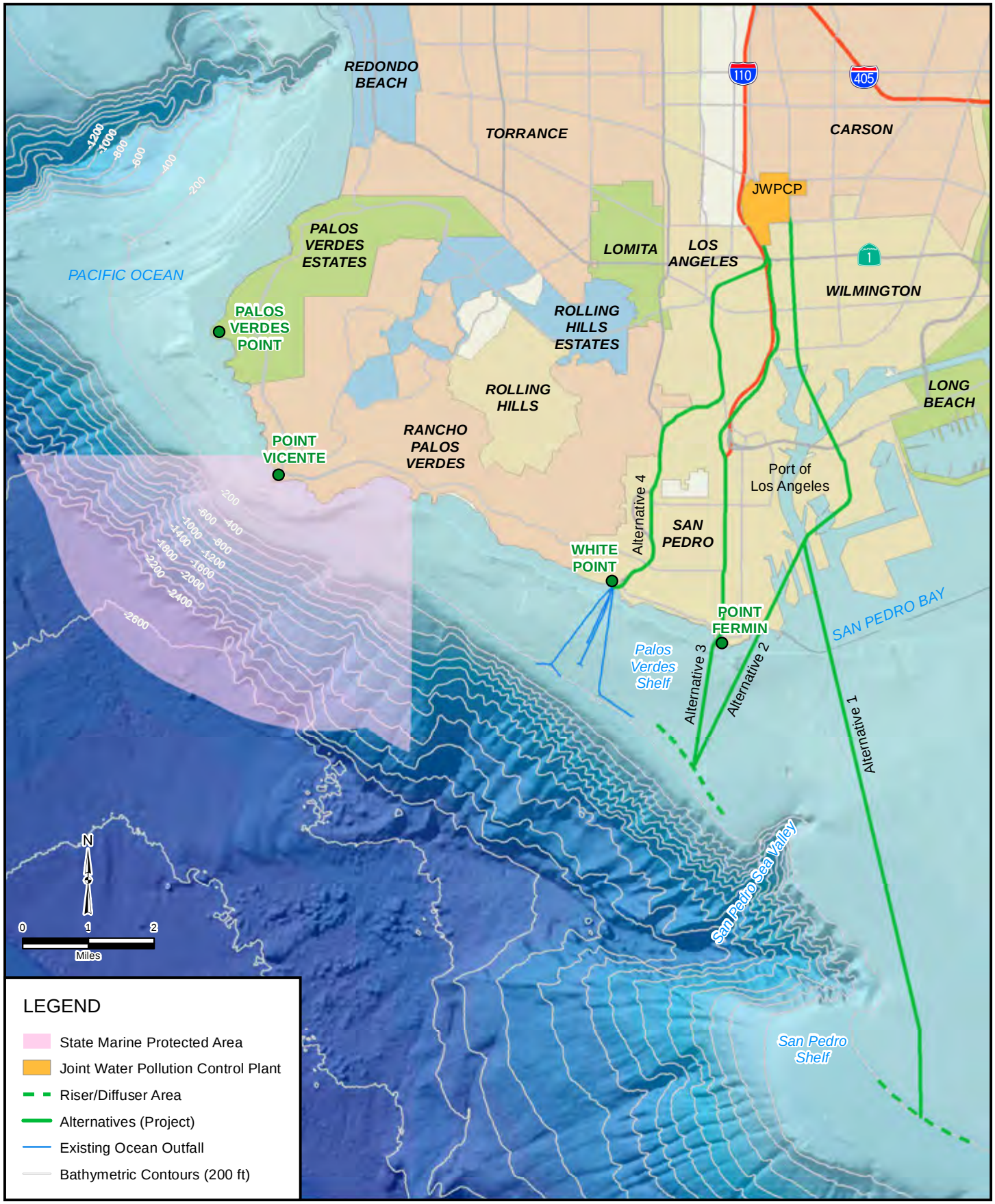


FIGURE 13-3

CLEARWATER Program

State Marine Protected Areas

Source: Sanitation Districts of Los Angeles County 2011, CaSIL 2001, Thomas Bros. 2011

(*Nereocystis luetkeana*) and other upright brown and low-growing red algal turfs may be found on hard bottoms to depths of approximately 100 feet (30 meters). Kelp beds in the SCB are strongly influenced by regional oceanographic conditions and tend to vary in size on both a seasonal and annual basis (MBC 2011).

Marine vegetation adds an additional dimension to the structure of the marine environment that attracts fishes and invertebrates into an area. On shallow reefs, fewer species and numbers of fish are found when kelp is absent. In the SCB, pile perch (*Rhacochilus vacca*), black perch (*Embiotoca jacksoni*), garibaldi (*Hypsypops rubicundus*), treefish (*Sebastes serriceps*), barred sand bass (*Paralabrax nebulifer*), California scorpionfish (*Scorpaena guttata*), and blackeye goby (*Rhinogobiops nicholsii*) are common on shallow reefs. If kelp is present, kelp bass (*Paralabrax clathratus*), blacksmith (*Chromis punctipinnis*), giant kelpfish (*Heterostichus rostratus*), señorita (*Oxyjulis californica*), and California sheephead (*Semicossyphus pulcher*) also occur in the area.

13.2.1.6 Underwater Sound

Natural and anthropogenic sources contribute to the ambient underwater sound level in the SCB. Natural sources of existing underwater sound include turbulence, wind, seismic activity, cetaceans, certain types of fish, and snapping shrimp. Anthropogenic sources include the operation of vessels, geologic profiling, and the use of commercial and military sonar systems. There is a high volume of shipping and other vessel activity in the SCB associated with the Port of Los Angeles and the Port of Long Beach. These activities are the predominant source of underwater sound in the project area. Typical underwater sound levels are measured by decibel reference pressures that are 1 millionth of a Pascal (dB re 1µPa). Those generated by supertankers and container ships are between 180 and 190 at a distance of 1 meter (Richardson et al. 1995).

13.2.1.7 Public Health

Both natural and anthropogenic hazards found in the marine environment can affect public health and lead to illness. Specifically, microorganisms either naturally found or from stormwater runoff or the disposal of waste can cause illness. In addition, the bioaccumulation of persistent chemicals in fish can be transferred and accumulate in people that eat that fish. These issues are discussed in the following sections in the context of public health.

Microorganisms

Microorganisms aid in the decay of naturally occurring vegetation and animal remains, and degrade anthropogenic inputs into the marine environment (Geesey 1993:191). Some microorganisms pose a risk to public health or marine organisms. Because concentrations of pathogens are usually very low, indicator organisms such as coliform bacteria and enterococcus are generally monitored as indicators of fecal pollution (Geesey 1993:222).

Since 1990, bacteria levels at swimming beaches visited by people (the most likely sites of exposure for humans to bacterial contamination in the marine environment) have been monitored and reported by Heal the Bay, an organization that tracks the quality of coastal waters. Levels have been improving annually and, in 2008, were the best overall to date (Heal the Bay 2008). Despite some problem areas, 87 percent of Southern California beaches received water quality ratings of very good to excellent during dry weather. During dry weather, water quality at open ocean beaches was found to be significantly better than at those within enclosed bays or harbors, or those that are located near running storm drains.

During wet weather, 52 percent of Southern California beaches were considered to have fair to poor water quality.

As discussed in Section 13.2.1.5, planktonic algal blooms (e.g., HABs) may result in the production of toxins at levels that can bioaccumulate. The HABs can cause illness and death in higher level animals and humans (Appendix 13-B).

Fish Tissue Bioaccumulation

Historical impacts of contaminants, particularly the chlorinated hydrocarbons DDT and PCBs, have been of regional concern in the SCB since the 1970s (see Section 13.2.1.4). Although sources of contamination have been reduced significantly in the last several decades, many of the chemicals are bound to sediments and are available to organisms through direct uptake or accumulated through ingestion of prey. In the SCB, the most contaminated areas occur in harbors and bays, and offshore of the Palos Verdes Peninsula (Mearns et al. 1991:v–vi; Anderson et al. 1993:682–685). The California Department of Fish and Game (CDFG) has advised the public to not consume or limit consumption of some types of fish caught in the SCB between Point Dume and Dana Point because of the bioaccumulation of contaminants in their tissue. These species are top smelt (*Atherinops affinis*), rockfishes, surf perch, black croaker (*Cheilotrema saturnum*), sculpin (scorpionfish), queenfish (*Seriphus politus*), kelp bass, corbina (*Menticirrhus undulatus*), and white croaker (*Genyonemus lineatus*) (CDFG 2010d). For a detailed description of some regional fish contamination studies, see Appendix 13-A.

13.2.2 Project Setting

The riser and diffuser would be located on either the PV Shelf or the SP Shelf, depending on the selected alternative. Any pertinent distinctions between the two shelves that are not adequately described by the regional setting are described in the project setting. The project setting also includes the physical and biological environments near the existing ocean outfalls. Available data were somewhat limited for the project setting; however, the most accurate and recent information was used. Wherever site-specific data are unavailable, the justification for the data presented is clearly identified. Additional detail regarding the SP Shelf, PV Shelf, and existing ocean outfalls can be found in Appendix 13-A.

A summary of physical, chemical, and biological characteristics of the effluent from the JWPCP from 2008 is shown in Appendix 13-D. The National Pollutant Discharge Elimination System (NPDES) permit for the JWPCP (see Section 13.3.4, Appendix 13-E, and Appendix 13-F) contains approximately 27,000 numeric and qualitative limits that must be met each year based on results of final effluent and receiving water sampling and analysis. During 2008, the JWPCP had no violations. The NPDES permit does not contain numerical discharge limits for constituents when the monitored concentrations are sufficiently below the thresholds necessary to protect the marine environment.

13.2.2.1 Riser/Diffuser Area

The riser and diffuser would be located on either the SP Shelf (for Alternative 1) or the PV Shelf (for Alternatives 2 and 3). A riser and diffuser would not be constructed for Alternative 4. The rehabilitation of the existing ocean outfalls would occur on the PV Shelf for Alternatives 1 through 4.

San Pedro Shelf

In general, characteristics of the SP Shelf are similar to those discussed in the regional setting. This section describes the differences that occur and augments the previous information with site-specific data

to facilitate the evaluation of local impacts. A full review of conditions on the SP Shelf is presented in Appendix 13-A.

Location and Geography

The SP Shelf riser and diffuser area would be approximately 7.5 miles from the Port of Los Angeles-Long Beach Breakwater, at a depth of approximately 200 feet (60 meters). It would be located at depths known as midshelf depths. The diffuser area would be on a relatively flat portion of the outer shelf at the southwest edge of the SP Shelf (Figure 13-4). The riser location would be approximately 2 miles southeast of the southern edge of the San Pedro Sea Valley, and approximately 1 mile northwest of the shelf break.

Oceanography

Large-scale, depth-averaged current patterns for the SP and PV Shelves were modeled and calibrated against field measurements to confirm consistency (Parsons 2011). In the vicinity of the SP Shelf riser and diffuser area, average currents throughout the water column in summer were modeled to flow northwest in the direction of the predominant slope flow, with speeds on the flatter area of the shelf in the project area expected at up to 0.1 feet per second (ft/s) (4 cm/s). In winter, average speeds throughout the water column in the project area were modeled to flow west with the predominant cross-slope flow at speeds of up to 0.1 ft/s (4 cm/s), possibly faster. As part of the Palos Verdes Flow Study conducted by the Sanitation Districts of Los Angeles County (Sanitation Districts), currents were measured at Station AG in the vicinity of the SP Shelf riser and diffuser area between 2006 and 2008. Currents were variable in both speed and direction with depth through the water column, though current speeds above 0.5 ft/s (15 cm/s) were common in depths above about 125 feet (38 meters) (Sanitation Districts 2008a). Since Station AG is deeper than the proposed riser site, data from a depth of 194 feet (59 meters) is presented to represent bottom currents in the project area. Over the 3-year study period, currents in the area at the project depth averaged almost 0.4 ft/s (13 cm/s), with a maximum current speed of 1.5 ft/s (47 cm/s) recorded in 2007. Current direction and velocity tendencies through the project area are shown on Figures 13-5 and 13-6, respectively. The figures are based on mooring data from the Palos Verdes Flow Study conducted by the Sanitation Districts from October 2000 through April 2008 (Sanitation Districts 2008a).

Water Quality

As part of the JWPCP receiving water monitoring program, water quality parameters are determined throughout the water column at Station 2706, in the vicinity of the SP Shelf riser and diffuser area, on a quarterly basis (Sanitation Districts 2010a). Data from a depth of 200 feet (61 meters) were used to represent conditions in the project area. Water quality parameters are summarized in Table 13-5.

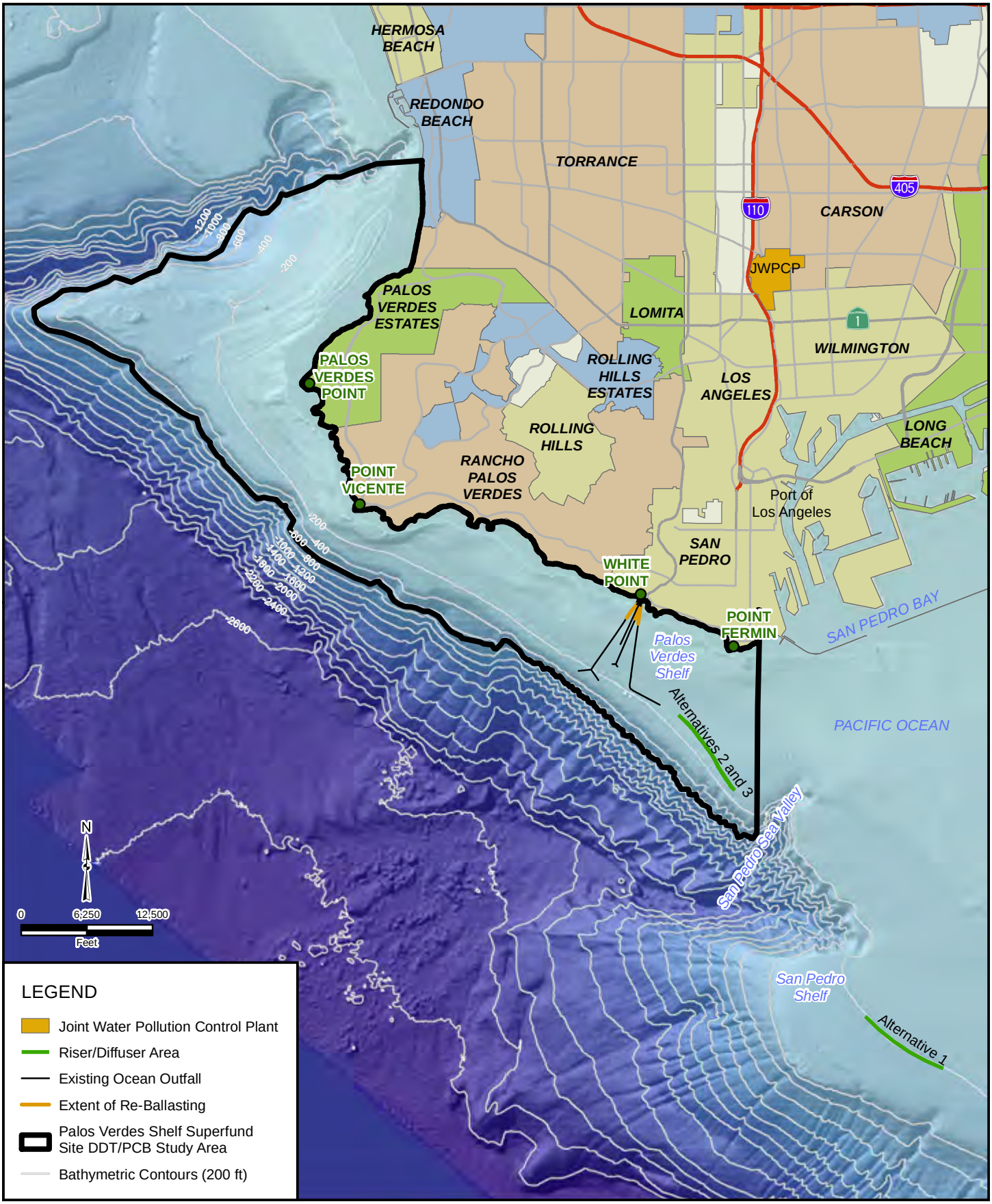


FIGURE 13-4

CLEARWATER Program

Location of the Proposed Riser/Diffuser Areas and the Palos Verdes Shelf Superfund Site DDT/PCB Study Area

Source: Sanitation Districts of Los Angeles County 2011, CaSIL 2001, Thomas Bros. 2011

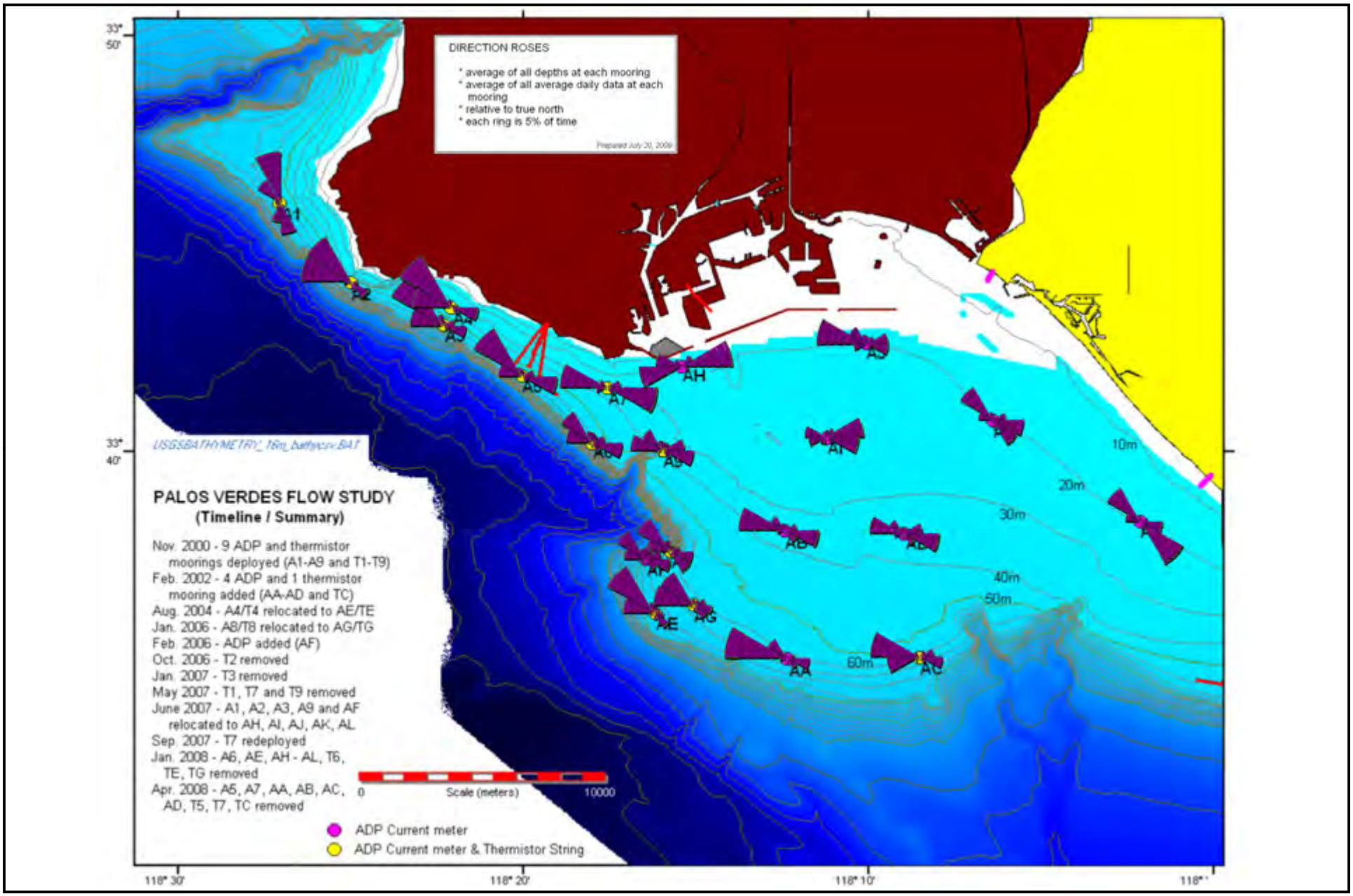


FIGURE 13-5

CLEARWATER Program

Palos Verdes Flow Study Current Direction Rose

Source: Sanitation Districts of Los Angeles 2009

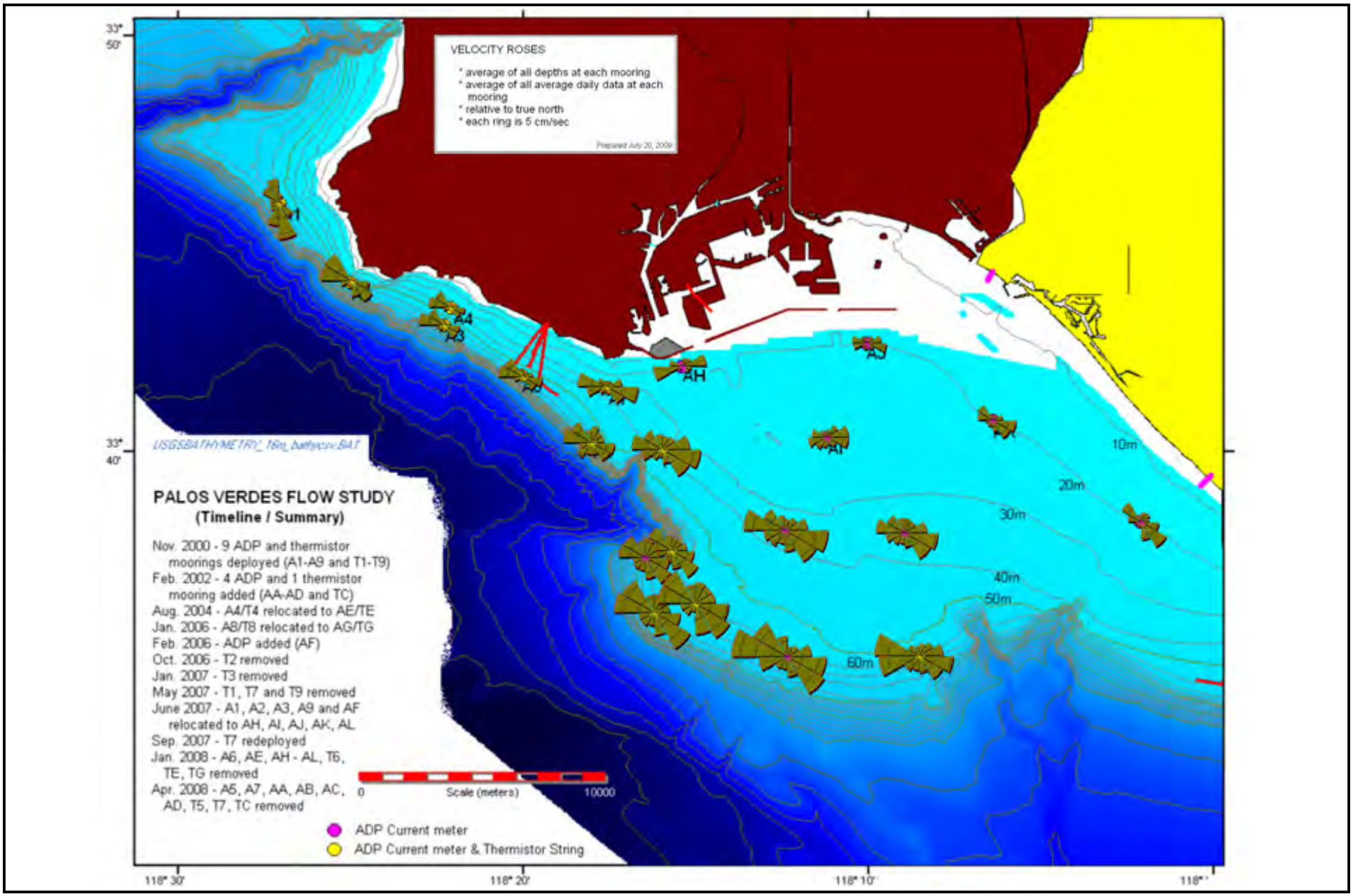


FIGURE 13-6

CLEARWATER Program

Palos Verdes Flow Study Current Velocity Rose

Source: Sanitation Districts of Los Angeles 2009

Table 13-5. Water Quality Parameters in the Vicinity of the SP Shelf Riser and Diffuser Area (Station 2706 at 200-Foot [61-Meter] Depth)

Parameters	Results[a]
Temperature (°C) – 2008	9.9 (50 °F) – 13.1 (56 °F) (11.5 [53 °F])
Temperature (°C) – 2009	10.0 (50 °F) – 12.2 (54 °F) (11.1 [52 °F])
Salinity (psu) – 2008	33.33 – 33.96 (33.61)
Salinity (psu) – 2009	33.26 – 33.89 (33.59)
Density (σt) – 2008	25.09 – 26.15 (25.59)
Density (σt) – 2009	25.21 – 26.09 (25.67)
Dissolved Oxygen (mg/L) – 2008	2.7 – 7.1 (5.0)
Dissolved Oxygen (mg/L) – 2009	3.2 – 6.2 (4.6)
Hydrogen Ion Concentration (pH) – 2008	7.8 – 8.2 (8.0)
Hydrogen Ion Concentration (pH) – 2009	7.8 – 8.0 (7.8)
Transmissivity (%) – 2008	87.1 – 90.5 (88.3)
Transmissivity (%) – 2009	87.9 – 88.8 (88.2)

[a] Average is shown in parentheses.
psu = practical salinity units
Source: Sanitation Districts 2009b, 2010b

The Sanitation Districts are required to test for water quality parameters on the SP Shelf, including the parameters described in Table 13-5 per the NPDES permits.

Sediment Quality

The SP Shelf covers over 68,000 acres between the depths of 100 and 400 feet (30 to 120 meters), generally considered midshelf depths. Soft-bottom sediments (primarily bioturbated muddy sand) are approximately 88 percent of the midshelf depths. Other sediment consists of sand or alternating sand and subsurface fine clay sediment layers. Approximately 12 percent of the SP Shelf at midshelf depths is hard surface (coarse sediment to larger rocks and substrate).

The SP Shelf diffuser area is not located within the boundaries of the United States (U.S.) Environmental Protection Agency (EPA)-designated DDT/PCB contaminated sediment study area, which is shown on Figure 13-4. DDT and PCBs have been reported in sediments from the SP Shelf, with higher levels of DDT and PCB found closer to the Palos Verdes Peninsula (Eganhouse and Venkatesan 1993; Schiff et al. 2006). In regional sampling conducted in 2003, DDT was detected in sediments of three midshelf depth stations on the SP Shelf, Stations 4026, 4058, and 4122 (Schiff et al. 2006). At the two stations closer to the PV Shelf (Stations 4026 and 4122), DDT levels exceeded the ERL[3] value, but were below the ERM[4] value for total DDT, a range in which effects on biota could occasionally occur. At those same two stations, PCBs were also detected in the sediments, though levels did not exceed ERL values.

In addition to the organic chlorinated hydrocarbons, samples were analyzed for concentrations of trace metals as well as other contaminants during the 2003 regional survey. Eleven trace metals were reported as enriched at one or more of the three midshelf depth stations on the SP Shelf (Schiff et al. 2006). Metal levels reported for the survey were below ERL values for the respective metals with the exception of

[3] ERL – Effects Range Low; concentrations equal to and above the ERL but below the ERM represent possible effects range within which effects to biota could occasionally occur.
[4] ERM – Effects Range Median; concentrations above the ERM represent a probable effects range within which effects could frequently occur.

mercury, which was reported at a value between the ERL and ERM levels at one of the three stations. Other contaminants levels considered enriched were not found at the three stations during the survey.

Biological Resources

Biological Communities

The SP Shelf riser and diffuser area is in Catch Block 740, which supports an active commercial and recreational fishing industry.[5] In 2006, six methods of commercial take were reported for fishes in Catch Block 740, including collection by various traps and nets, hook and line, longlines, harpoon and spear, set and drift gill nets, purse seines, and trawls (CDFG 2007). For a detailed description of catch in Catch Block 740 in 2006, see Appendix 13-A.

Because the SP Shelf riser and diffuser area is 7.5 miles from the shore, it is unlikely that shorebirds would use this area for feeding and foraging. Seabirds that feed near their nesting sites (such as California least tern and skimmers) are also unlikely to use the area. Other seabirds such as the California brown pelican, western grebe (*Aechmophorus occidentalis*), common murre (*Uria aalge*), and sooty shearwater (*Puffinus griseus*) may feed and forage in the area (Briggs et al. 1981:63–76).

Marine Habitat

The SP Shelf primarily consists of soft-bottom habitat (approximately 59,650 acres between 100- and 400-foot [30- and 120-meter] depth), which consists of bioturbated sand and fine sediment. Hard-bottom habitat of the shelf is primarily found in an area identified as Horseshoe Kelp, although there is no longer any kelp in this area. The hard-bottom habitat is a mixture of bottom rocks and coarse sediment.

Underwater Sound

The riser and diffuser area on the SP Shelf would be located offshore of the Ports of Los Angeles and Long Beach – the busiest port complex in the United States. In 2008, approximately 21,600 combined inbound/outbound vessel trips were recorded at the Port of Los Angeles, and approximately 48,570 inbound/outbound vessel trips were recorded at the Port of Long Beach (Corps 2010). Therefore, a total of approximately 70,000 inbound/outbound vessel trips occurred in 2008 for the entire port complex (Corps 2010). (See Chapter 19 for additional information regarding the existing setting of the types and quantities of ships using the Ports of Los Angeles and Long Beach.) These types of ships generate relatively loud underwater sounds. As identified in Section 13.2.1.6, these activities are the predominant source of underwater sound in the project area. Those generated by supertankers and container ships are between 180 and 190 at a distance of 1 meter (Richardson et al. 1995). A recent underwater noise study conducted in the Cerritos Channel to characterize underwater ambient noise conditions provides underwater noise levels typical of a busy shipping channel (Tetra Tech 2011). Principal ambient contributors within the Cerritos Channel include shipping traffic, port and intermodal facilities operating along the channel shore, wind and waves, precipitation, biological noise, and flow current and tidal current, which can create turbulence. Shipping traffic typically dominates the ambient environment for frequencies between 10 and 1000 hertz. The sum of anthropogenic and natural noise depends on source levels and the propagation conditions including water depth and bottom conditions. Ambient noise measurements were conducted at several locations throughout the channel. The following is a summary of measured sound levels (Tetra Tech 2011):

- Range of sound levels exceeded 5 percent of the time: 132 to 147 decibel (dB)
- Range of sound levels exceeded 10 percent of the time: 131 to 143 dB

[5] Catch blocks are 10- by 10- nautical mile areas delineated to track commercial fishery catches by the CDFG.

- Range of sound levels exceeded 50 percent of the time: 124 to 136 dB
- Range of sound levels exceeded 90 percent of the time: 120 to 132 dB

In recent years, larger cargo volumes have been accommodated primarily by using larger vessels rather than adding to their numbers. Container ships as long as 1,000 feet and weighing over 100,000 tons have visited the Port of Los Angeles. In addition to this commercial cargo traffic, the Port of Los Angeles also serves a small fishing fleet based in Fish Harbor and a wide variety of commercial passenger vessels, including cruise ships, passenger ferries to Catalina Island, sport fishing tour boats, whale watching boats, and harbor cruisers, as well as private recreational vessels. Passenger ferry traffic to Catalina Island varies seasonally with approximately 10 to 15 weekly round-trips to the island during the spring (Catalina Express 2010). These types of smaller vessels also generate underwater sound, although typically not within the ranges of larger supertankers. However, the commercial and recreational vessel traffic of the Ports of Los Angeles and Long Beach generally results in a higher ambient level of underwater sound than other locations not within the shipping lanes or in proximity to the largest port complex on the west coast. There are several ambient underwater noise levels documented at various locations in the western U.S. (Caltrans 2009), which account for a mix of vessel traffic including larger shipping vessels and recreational vessels. These include:

- 120 to 155 decibels peak (dB_{PEAK}) (133 decibels root mean square [dB_{RMS}]) for heavy industrial use and boat traffic in San Francisco Bay and Oakland outer harbor
- 113 dB_{PEAK} for the nearshore heavy commercial and recreational boat traffic in Monterey Bay
- 116 dB_{PEAK} for the offshore heavy commercial and recreational boat traffic in Monterey Bay

Palos Verdes Shelf

Although the general characteristics of the PV Shelf are similar to those discussed for the regional setting and for the SP Shelf, one of the major differences is that the PV Shelf riser and diffuser area is within the boundaries of the EPA-designated DDT/PCB study area. This section describes the differences that occur between the SP and PV Shelves and augments the previous information with site-specific data on the PV Shelf to facilitate the evaluation of local impacts. A full review of conditions on the PV Shelf is presented in Appendix 13-A.

Location and Geography

The PV Shelf covers approximately 19,900 acres between the San Pedro Sea Valley and Redondo Canyon in Santa Monica Bay at depths of approximately 100 to 400 feet (30 to 120 meters). The PV Shelf riser and diffuser area would be located approximately 2 miles from Point Fermin, at a depth of approximately 175 feet (53 meters). This depth is known as midshelf. The PV Shelf riser and diffuser area would be on a relatively flat section of the outer shelf at the southeast edge of the PV Shelf. The location of the PV Shelf riser and diffuser area is identified on Figure 13-4. The riser location would be approximately 1.4 miles northwest of the northern edge of the San Pedro Sea Valley and approximately 0.5 mile northeast of the shelf break.

Oceanography

Large-scale, depth-averaged current patterns for the SP and PV Shelves were modeled and calibrated against field measurements to confirm consistency (Parsons 2011). In the vicinity of the PV Shelf riser and diffuser area, average currents throughout the water column in summer were modeled to flow northeast across the San Pedro Sea Valley, then flow easterly and southeasterly in the project area on the shelf at speeds of about 0.1 ft/s (3 cm/s). In winter, average speeds throughout the water column in the project area were modeled to be potentially variable, with both upslope and cross-shelf westerly currents and southeast countercurrent flow indicated for the area at speeds of about 0.06 ft/s (2 cm/s). As part of

the Palos Verdes Flow Study conducted by the Sanitation Districts, currents were measured at Station A6 in the vicinity of the PV Shelf riser and diffuser area between 2000 and 2008. Daily currents were variable in both speed and direction with depth through the water column, though current speeds above 0.5 ft/s (15 cm/s) were common in depths above about 46 feet (14 meters) (Sanitation Districts 2008a). Since Station A6 is deeper than the riser site, data from a depth of 175 feet (53 meters) is presented to represent bottom currents in the project area. Over the 9-year study period, currents in the area at the project depth averaged almost 0.3 ft/s (10 cm/s), with a maximum current speed of 2.3 ft/s (69 cm/s) recorded in 2001. Current direction and velocity tendencies through the project area are shown on Figures 13-5 and 13-6, respectively. The figures are based on mooring data from the Palos Verdes Flow Study conducted by the Sanitation Districts from October 2000 through April 2008 (Sanitation Districts 2008a).

Water Quality

As part of the JWPCP receiving water monitoring program, water quality parameters are measured quarterly throughout the water column at Station 2803, in the vicinity of PV Shelf riser and diffuser area (Sanitation Districts 2010a). Although the bottom depth at the station location is 196 feet (60 meters), data collected at a depth of 175 feet (53 meters) at the station were used to represent bottom conditions because the proposed riser and diffuser would be located at a depth of 175 feet (53 meters). Water quality parameters are summarized in Table 13-6.

Table 13-6. Water Quality Parameters in the Vicinity of the PV Shelf Riser and Diffuser Area (Station 2803 at 175-Foot [53-Meter] Depth)

Parameters	Results[a]
Temperature (°C) – 2008	9.9 – 13.1 (11.6)
Temperature (°C) – 2009	9.9 – 12.3 (11.4)
Salinity (psu) – 2008	33.32 – 33.94 (33.60)
Salinity (psu) – 2009	33.28 – 33.90 (33.53)
Density (σt) – 2008	25.08 – 26.14 (25.57)
Density (σt) – 2009	25.28 – 26.11 (25.56)
Dissolved Oxygen (mg/L) – 2008	2.9 – 7.6 (4.9)
Dissolved Oxygen (mg/L) – 2009	3.2 – 6.1 (4.9)
Hydrogen Ion Concentration (pH) – 2008	7.8 – 8.1 (8.0)
Hydrogen Ion Concentration (pH) – 2009	7.7 – 8.0 (7.8)
Transmissivity (%) – 2008	83.5 – 90.1 (86.8)
Transmissivity (%)– 2009	86.8 – 89.4 (88.1)

[a] Average is shown in parentheses.
psu = practical salinity units
Source: Sanitation Districts 2009b, 2010b

Sediment Quality

The PV Shelf includes 19,895 acres between the depths of 100 and 400 feet (30 and 120 meters), generally considered midshelf depths. Soft-bottom sediments are approximately 97 percent of the midshelf depths. The PV Shelf riser and diffuser area is within the boundaries of the EPA-designated Palos Verdes Shelf Superfund Site. The location of the DDT/PCB study area is depicted on Figure 13-4. The extent of the DDT contamination within the PV Shelf Superfund Site Study Area (EPA 2009a:27–28) and the proposed riser/diffuser and re-ballasting locations are shown on Figure 13-7. The extent of the PCB contamination within the PV Shelf Superfund Site Study Area (EPA 2009a:27–28) and the proposed riser/diffuser and re-ballasting locations are shown on Figure 13-8. See the discussion under Existing

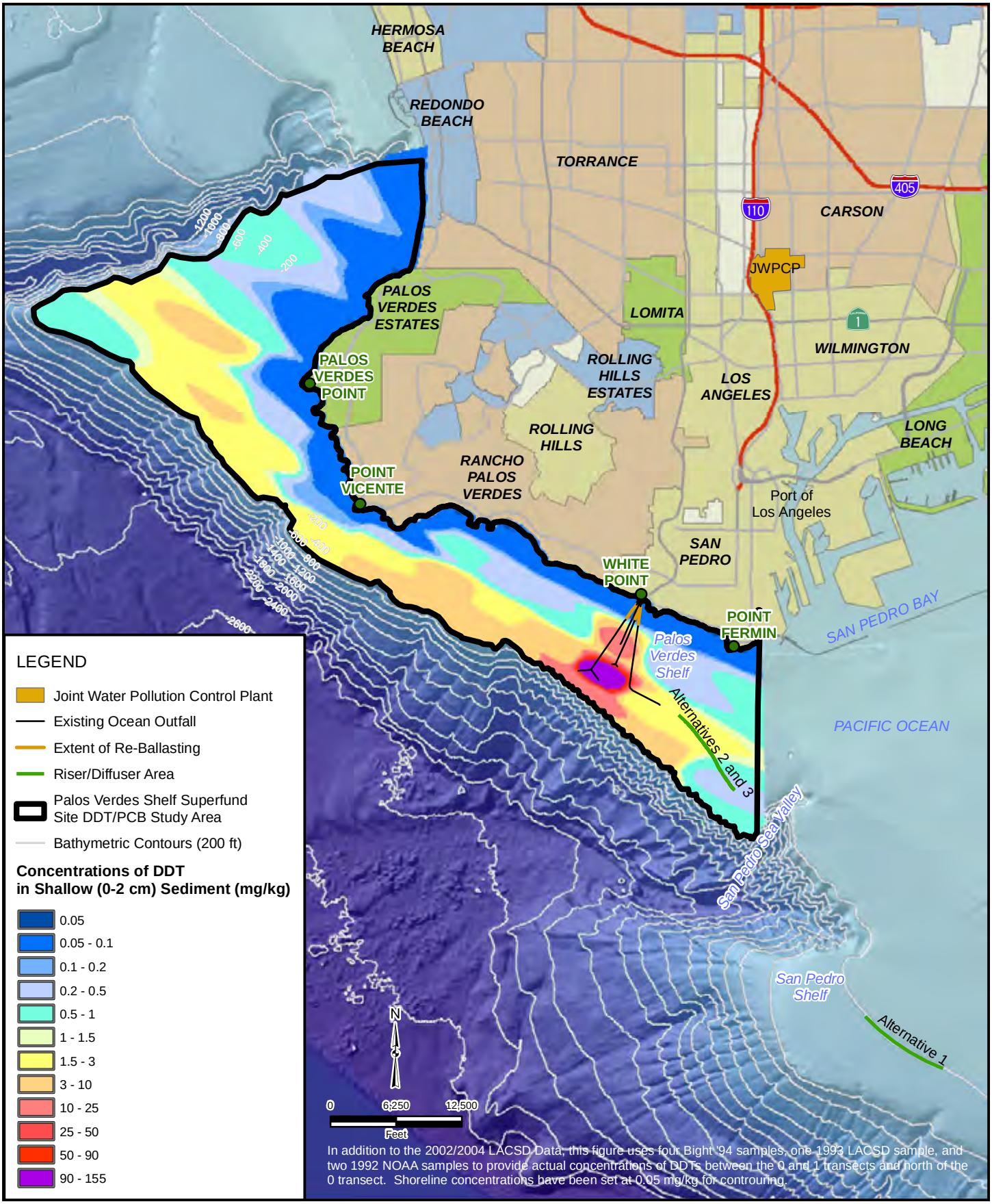


FIGURE 13-7

CLEARWATER Program

Interpretive DDT Concentrations on the Palos Verdes Shelf

Source: Sanitation Districts of Los Angeles County 2011, CaSIL 2001, Thomas Bros. 2011, EPA 2009

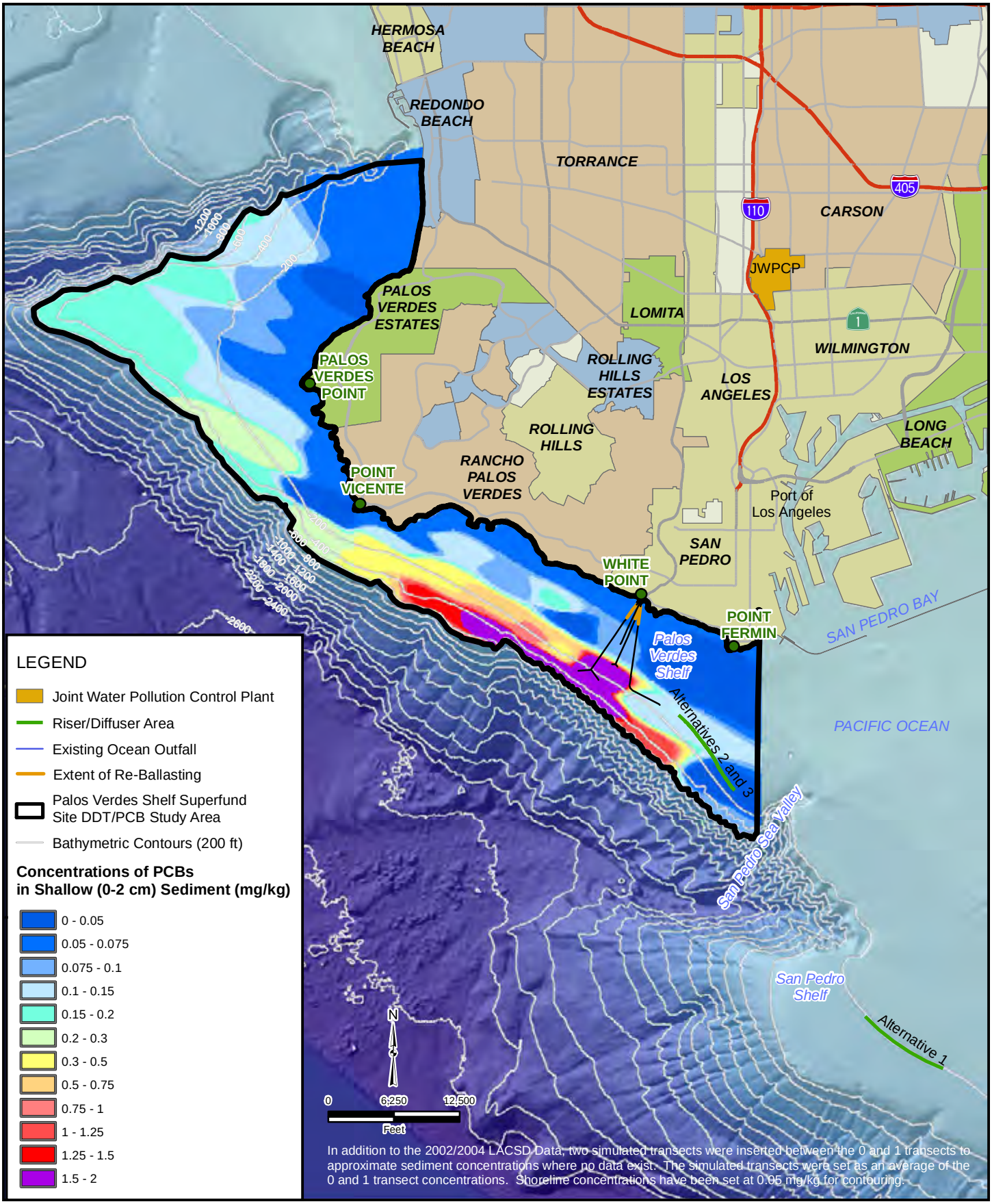


FIGURE 13-8

CLEARWATER Program

Interpretive PCB Concentrations on the Palos Verdes Shelf

Source: Sanitation Districts of Los Angeles County 2011, CaSIL 2001, Thomas Bros. 2011, EPA 2009

Ocean Outfalls for more details regarding the DDT/PCB on the PV Shelf, and refer to Appendix 13-A for levels of sediment contamination.

Biological Resources

Biological Communities

The PV Shelf riser and diffuser area is in Catch Block 719[6]. In 2006, eight methods of commercial take were reported in Catch Block 719 including collection by diver, fish trap, hook and line, set and drift gill nets, purse and drum seines, and brail (CDFG 2007). For a detailed description of catch in Catch Block 719 in 2006, see Appendix 13-A.

Because the PV Shelf riser and diffuser area is approximately 2 miles from shore, mainland nesting seabirds including the California least tern, other terns, and skimmers may use this area for feeding and foraging. Other seabirds, such as the brown pelican and cormorants, also likely use this location for feeding and foraging.

Marine Habitat

The PV Shelf is primarily soft-bottom habitat. There are approximately 19,335 acres of soft-bottom habitat, consisting of bioturbated sand and fine sediment, and 560 acres of hard-bottom habitat on the PV Shelf, located at midshelf depths (between 100 and 400 feet [30 and 120 meters]).

Underwater Sound

The underwater sound environment at the PV Shelf riser and diffuser area would be similar to that of the SP Shelf riser and diffuser area and the SCB, except that the PV Shelf riser and diffuser area is further removed from the shipping lanes. Therefore, it would likely receive less vessel traffic and less noise associated with vessel traffic, thus resulting in a lower ambient underwater noise level when compared to the SP Shelf.

Existing Ocean Outfalls

The existing ocean outfalls are within the boundaries of the EPA-designated DDT/PCB study area. Although characteristics in the vicinity of the existing ocean outfalls are generally similar to those discussed for the regional setting and the PV Shelf, additional data are presented in this section that augments the information with site-specific data to facilitate the evaluation of local impacts. A full review of conditions near the existing ocean outfalls is presented in Appendix 13-A.

Location and Geography

The existing ocean outfalls extend from the existing manifold structure at Royal Palms Beach and terminate at a depth of approximately 200 feet (60 meters) as described in Section 2.2.4.3. The proposed re-ballasting would occur along the existing ocean outfalls at depths of 20 to 50 feet as shown on Figures 13-4, 13-7, and 13-8.

Oceanography

Currents of the SCB are presented in Section 13.2.1.2. Large-scale, depth-averaged current patterns for the SP and PV Shelves were modeled and calibrated against field measurements to confirm consistency (Parsons 2011). In both winter and summer, northerly current flowing over the SP Shelf cross over the base of the San Pedro Sea Valley, and then predominantly turn to the west to follow the slope on the PV Shelf at speeds up to 0.2 ft/s (6 cm/s). In the area of the existing ocean outfalls, studies show that

[6] Catch blocks are 10-by 10-nautical-mile areas delineated to track commercial fishery catches by the CDFG.

current speeds of 9 to 15 cm/s are common, while net, long-term current speed averaged about 4 cm/s (Sanitation Districts 2008b).

Water Quality

As part of the JWPCP receiving water monitoring program, water quality parameters are determined on a quarterly basis throughout the water column. Three stations adjacent to the existing ocean outfalls pipelines (Stations 2903, 2902, and 2901), on the 197-foot (60-meter), 98-foot (30-meter), and 33-foot (10-meter) isobaths, respectively (Sanitation Districts 2010a) are summarized in Table 13-7. Station 2903 is nearest the existing ocean outfall discharges, and Stations 2902 and 2901 are nearest the location of the rehabilitation work.

Table 13-7. Near-Bottom Water Quality Parameters at Three Stations of Differing Depths Along the Existing Ocean Outfalls

Parameters	197 Feet (60 Meters)[a]	98 Feet (30 Meters)[a]	33 Feet (10 Meters)[a]
Temperature (°C) – 2008	10.0 (50 °F) – 13.6 (56°F) (11.6 [53 °F])	11.4 (53°F) – 14.9 (59°F) (13.3 [56°F])	12.2 (54°F) – 19.5 (67°F) (15.2 [59°F])
Temperature (°C) – 2009	9.8 (50 °F) – 12.1 (54°F) (11.3[52 °F])	10.8 (51°F) – 12.7 (55°F) (12.1 [54°F])[b]	13.0 (55°F) – 15.5 (60°F) (14.6 [58°F])
Salinity (psu) – 2008	33.25 – 33.93 (33.58)	33.22 – 33.72 (33.49)	33.26 – 33.73 (33.47)
Salinity (psu) – 2009	33.20 – 33.93 (33.51)	33.16 – 33.66 (33.36)[b]	33.24 – 33.56 (33.37)
Density (σt) – 2008	24.93 – 26.11 (25.55)	24.74 – 25.63 (25.16)	23.74 – 25.31 (24.72)
Density (σt) – 2009	25.18 – 26.15 (25.56)	25. 04 – 26.76 (25.29)[b]	24.60 – 25.11 (24.80)
Dissolved Oxygen (mg/L) – 2008	2.6 – 7.0 (4.8)	4.0 – 8.4 (6.1)	5.4 – 8.0 (6.9)
Dissolved Oxygen (mg/L) – 2009	3.1 – 6.4 (4.8)	3.8 – 6.5 (5.4)[b]	6.7 – 9.4 (7.6)
Hydrogen Ion Concentration (pH) – 2008	7.8 – 8.2 (7.9)	7.8 – 8.2 (8.1)	8.0 – 8.2 (8.1)
Hydrogen Ion Concentration (pH) – 2009	7.6 – 8.0 (7.8)	7.7 – 8.0 (7.8)[b]	7.8 – 8.3 (8.1)
Transmissivity (%) – 2008	80.1 – 88.0 (82.9)	72.0 – 83.0 (78.1)	70.3 – 77.3 (74.3)
Transmissivity (%) – 2009	79.8 – 86.8 (84.8)	78.8 – 84.2 (81.8)[b]	71.2 – 82.0 (75.7)

[a] Average is shown in parentheses.
[b] No sample was collected for 30-meter depth in Quarter 1; data from deepest depth sampled (29 meters) was used in table to show seasonal ranges.
psu = practical salinity units
Source: Sanitation Districts 2009b, 2010b

Levels of ammonia-N, organic nitrogen, nitrate, nitrite, and phosphate have routinely been monitored in the JWPCP discharge since the 1970s (Sanitation Districts 2008b, 2009b). Discharge volume does not vary significantly through the year, and effluent nutrient concentrations are relatively constant; therefore, the mass loading of nutrients stays fairly constant year-round. Within the zone of initial dilution (ZID[7]), ammonia is diluted to about 250 micrograms per liter (µg/L) in waters where the ambient concentration is below 20 µg/L, with further dilution to background levels happening as the effluent field is advected within a mixing zone that occurs below the trapping depth. In 2008, total nitrogen was discharged at an average concentration of 39.4 mg/L, ammonia-N at 36.7 mg/L, organic nitrogen at 2.5 mg/L, nitrate-N at 0.05 mg/L, nitrite-N at 0.14 mg/L, total phosphate at 0.73 mg/L, and silicon (based on a single study conducted in early 2009) at 22.0 mg/L. As shown in Table 13-8, the JWPCP nutrient contribution, while

[7] The zone of initial dilution is described geographically as the volume of water encompassed by a line drawn around the diffuser at a distance equivalent to the water depth at the diffuser and extending from the sea bottom to the surface. The initial dilution zone is also described as extending to the point where effluent dilution due to jet momentum from the outfall ports and buoyancy momentum through the water column is complete.

greater than runoff and aerial deposition, is still far below estimates of the contribution from upwelling. Nutrients released from the JWPCP are small when compared to those released during upwelling.

Table 13-8. Estimated Annual Nutrient Mass Emissions in the Vicinity of the Existing Ocean Outfalls

Parameter	JWPCP (MT)	Runoff (MT)	Aerial Deposition (MT)	Upwelling (MT)
Total Nitrogen	16,495	782	70	431,374
Ammonia Nitrogen	15,365	135	N/A	N/A
Organic Nitrogen	1,047	N/A	N/A	N/A
Nitrate Nitrogen	21	647	N/A	431,000
Nitrite Nitrogen	59	N/A	N/A	374
Total Phosphate	306	186	N/A	76,100
Silicate	9,210	N/A	N/A	333,000

MT= metric tons

N/A = not analyzed

Source: Sanitation Districts 2009a. This data, and information on regional inputs (see Section 13.2.1) adjusted for the project area, were used to calculate annual mass emissions to the local environment, as presented in this table. Although the discharge of nutrients from the JWPCP far exceeds estimated input from local runoff and aerial deposition for most nutrients, nutrient input from upwelling events considerably surpasses annual emissions from the JWPCP discharge.

Sediment Quality

Sediment on the PV Shelf differs from sediment in the rest of the SCB because it contains the settled particulates associated with the ocean outfall discharges and known DDT and PCB sediment contamination.

Sediments were sampled at and inshore of the existing ocean outfalls at Stations 8C (depth of 200 feet [61 meters]) and 8D (depth of 98 feet [30 meters]) as part of the JWPCP receiving water monitoring program in 2008 and 2009. Mean sediment grain size at outfall depth is medium silt; at the shallower stations, mean sediment grain size is fine sand. Fine silt and very fine silt were reported at deeper stations offshore of the outfalls (depths greater than 200 feet [61 meters]). (Sanitation Districts 2010a.)

An estimated 1,800 metric tons (MT) of DDT was discharged onto the PV Shelf between the 1940s and 1971 (Sanitation Districts 2008b). Between 1971 and 1985, nearly 56 MT of PCBs were estimated to have been released from seven Southern California municipal dischargers (SCCWRP 1987). Because PCBs were so widely used, however, sources to the environment were widespread and variable, with discharges onto the PV Shelf only partly contributing to total inputs in Southern California. In 1971, for example, of the 44 MT estimated to enter the SCB, 57 percent (28 MT) was from ocean dumping, 23 percent (10 MT) from wastewater discharges, 9 percent (4 MT) from vessel coating, 4.5 percent (2 MT) from direct rainfall, and 0.5 percent from surface runoff (NOAA/NOS 1991:15-1–15-2).

Sediments at Stations 8C and 8D were analyzed for sediment contamination in 2008 and 2009. At Station 8C near the outfalls at 200 feet, total DDT was found at concentrations of 144 mg/dry kilogram (kg) in 2008 and 129 mg/dry kg in 2009 (Sanitation Districts 2010a). Inshore along the outfall pipeline at a 100-foot depth, DDT levels at Station 8D were reported at 0.27 mg/dry kg in 2008 and 0.40 mg/dry kg in 2009, approximately 300 to 500 times lower than the values at the discharge. Despite these differences, levels at both stations during both years exceeded the ERM value for total DDT. Total PCBs were found at a level of 4.85 mg/dry kg and 3.56 mg/dry kg at the outfall depth in 2008 and 2009, respectively. Both reported values exceed the ERM level for total PCBs. At Station 8D, PCB levels were

below detection limits in 2008, and found at a level of 0.03 mg/dry kg in 2009, which exceeded the ERL concentration for total PCBs.

Biological Resources

Biological Communities

The local biological communities that differ from those found in the SP Shelf and PV Shelf riser and diffuser areas include plankton, invertebrates, and fishes. Each of these is discussed in detail as it relates to the existing ocean outfalls.

Plankton. Dissolved oxygen and chlorophyll-a levels, the main indicators of phytoplankton productivity, are monitored quarterly at 48 stations in the vicinity of the existing ocean outfalls. The 2008 and 2009 results for chlorophyll-a near bottom at a depth of 197 feet (60 meters), mid-depth at 100 feet (30 meters), and in the upper water column at 33 feet (10 meters) for Station 2903, adjacent to the discharge of the outfall pipelines, are presented in Table 13-9.

Table 13-9. Chlorophyll-a Monitoring (2008/2009) in the Vicinity of the Existing Ocean Outfalls Discharge at Various Depths in the Water Column

Parameter (Year)	197 Feet (60 meters)[a] (µg/L)	100 Feet (30 meters)[a] (µg/L)	33 Feet (10 meters)[a] (µg/L)
Chlorophyll-a Concentrations (2008)	0.4 – 2.3 (1.4)	0.5 – 6.1 (3.1)	0.7 – 7.5 (3.6)
Chlorophyll-a Concentrations (2009)	0.6 – 6.6 (2.3)	0.6 – 5.0 (2.2)	3.1 – 25.3 (10.6)

[a] Yearly average is shown in parentheses.
µg/L = micrograms per liter
Source: Sanitation Districts 2009b; Sanitation Districts 2010b

The data confirm that the majority of phytoplankton is typically found in the upper water column, while the existing effluent plume is usually trapped below a density stratification layer at deeper depths. In general, no increase in phytoplankton levels is associated with the existing effluent plume. In addition, no association between the JWPCP discharge and HABs has been detected.

Invertebrates. The invertebrate community assemblages found on the PV Shelf are similar to those found throughout the SCB. On the PV Shelf, assemblages are typical of soft bottoms throughout Southern California. These assemblages are dominated primarily by polychaete annelids, arthropods, and mollusks (Sanitation Districts 2010a). Results from the Benthic Response Index (BRI) indicate that benthic assemblages continue to improve and recover from the pollutants discharged on the shelf between the 1940s and 1971. The BRI is an index of infaunal community response to environmental disturbance. The BRI is the abundance weighted average pollution tolerance of species within a sample, and is used in Southern California to classify the degree to which coastal habitats are impacted. In 1972, the PV Shelf (between the 30-meter and 305-meter isobaths) was classified as *defaunated* or exhibited loss of community function (Sanitation Districts 2010a:5.15). By 2009, the benthic community in large portions of the area monitored by the Sanitation Districts was considered to be in *reference* condition. Reference condition means that the community is similar to other community assemblages in Southern California. However, some communities near the discharge exhibited variation from reference condition, indicating they may still be affected by legacy contaminants.

Fishes. Some species of fish are likely attracted to the artificial hard-bottom substrate provided by the existing ocean outfall structures, including the existing ocean outfall pipelines and nearshore reefs. Hard-bottom associated fish species included California scorpionfish, blackeye goby, shiner perch

(*Cymatogaster aggregata*), and ocean whitefish (*Caulolatilus princeps*); all have been taken in low numbers during trawl surveys (Sanitation Districts 2008b).

Protected Species

Black abalone, which is a federally endangered species designated by the ESA as previously described in Table 13-4, have been known to occur to depths of about 30 feet (9 meters), inshore of the existing diffusers. The presence of black abalone has not been identified during previously conducted surveys of the existing ocean outfalls (Sanitation Districts 2011a).

The CDFG has identified areas off Palos Verdes near the JWPCP outfalls as key locations for the recovery of black abalone (CDFG 2005:6–7). Additionally, the National Marine Fisheries Service (NMFS) recently designated the rocky interidal and subtidal habitats surrounding the Palos Verdes Peninsula and existing from the Palos Verdes/Torrance border to the Los Angeles Harbor as critical habitat for black abalone (NMFS 2011).

Marine Vegetation

Giant kelp beds occur inshore of the existing ocean outfalls, though the sizes of the beds have changed over time. Historic trends for kelp beds in the area of the existing ocean outfalls are presented in Appendix 13-A. In 2008, approximately 150 acres of kelp were reported in the White Point area at water depths ranging from approximately 40 to 70 feet. Areas shoreward of 40-foot depths do not support kelp due to wave action, sea urchin grazing, and the absence of hard substrate. There is no eelgrass located at the existing ocean outfalls or within the general vicinity of the existing ocean outfalls. Eelgrass is usually found at depths between +6.0 and -22.0 feet mean lower low water level (MLLW) (+2.4 and -6.6 meter MLLW) (Phillips 1984:4).

Underwater Sound

The underwater sound environment at the existing ocean outfalls would be similar to, but generally quieter than, the sound environment of the PV Shelf riser and diffuser area. The existing ocean outfalls are close to shore and outside the existing shipping lanes. Therefore, this area would likely receive less vessel traffic and experience less noise associated with vessel traffic.

Public Health

Microorganisms

As part of the monitoring requirements for the JWPCP discharge, eight shoreline sites on the Palos Verdes Peninsula are sampled weekly, and the results are provided to public health officials (Sanitation Districts 2010a). In addition, surface and near-bottom samples are collected at six inshore sites five times per month to assess compliance with human health risk water contact and shellfish harvesting standards, and three surface samples are collected monthly at offshore stations near the outfalls, with the results also used to assess compliance with water contact requirements. Results of sampling during 2008 and 2009 are summarized in Table 13-10.

Table 13-10. Microbiology Sampling (2008 and 2009) in the Vicinity of the Existing Ocean Outfalls

Station	Total Coliform (CFU/mL)	Fecal Coliform (CFU/mL)	Enterococcus (CFU/mL)
Shoreline	<1 to 4,200	<1 to 800	<1 to 2,600
Inshore	<1 to 300	<1 to 210	<1 to 19
Offshore	<1 to 40	<1 to 7	<1 to 8

CFU = colony forming units
mL = milligrams/liter
Source: Sanitation Districts 2010a

During the monitoring period, the JWPCP was found to be in compliance with water contact and shellfish harvesting microbiological standards. Lower values near the discharge and higher shoreline and, to a lesser extent, inshore values, suggested a shoreline source of bacteria related to local human and wildlife use and stormwater runoff. Furthermore, daily microbiological samples are also collected at the manifold. These samples show compliance with California Ocean Plan standards before discharge and dilution by the ocean, thus providing additional evidence of a shore-based source of bacteria related to local use and stormwater runoff.

Fish Tissue Bioaccumulation

Bioaccumulated contaminants in fishes have been studied in the area since the 1970s, and despite reductions in levels by the 1990s, growing concerns about human consumption resulted in the commercial closure of white croaker fishing offshore of Palos Verdes (Sanitation Districts 2010a). Within the Palos Verdes Peninsula area, which includes the existing ocean outfalls, the Office of Environmental Health Hazard Assessment recommends that locally caught white croaker not be consumed; for women (age 18 to 45) and children (age 1 to 17), consumption of California scorpionfish, rockfishes, and kelp bass be limited to one serving per week; and for women (over age 45) and men (over age 17), consumption of California scorpionfish and kelp bass be limited to one serving per week and rockfishes be limited to two servings per week (California EPA 2009b). The following contaminants have been regularly found in these types of fish: PCBs, DDT, arsenic, and mercury. For a detailed discussion of the quantities and levels of contamination found in various fish tissue sampled near the existing ocean outfalls, refer to Appendix 13-A.

13.3 Regulatory Setting

13.3.1 Federal

13.3.1.1 Clean Water Act of 1972

In 1948, the United States Congress enacted the original Federal Water Pollution Control Act (FWPCA). Since its passage, the FWPCA has been amended several times, most extensively in 1977 as the Clean Water Act of 1977 (CWA). The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters” (U.S. Code [USC], Title 33, Section 1251[a]).

A program to regulate the discharge of dredged or fill materials in U.S. waters was established by CWA Section 404. Under CWA Section 404, the U.S. Army Corps of Engineers (Corps) can issue two types of permits: a general permit or an individual permit. The general permit is issued to the public at large on a regional or national basis, and is issued when the activities would cause only minimal direct or cumulative impacts. An individual permit is required for an activity not already authorized under a general permit; would exceed impact thresholds under a general permit; or could result in impacts that are more than minimal.

Under CWA Section 303(c), the states are primarily responsible for the adoption and periodic review of water quality standards for all waters within their boundaries. The California SWRCB is designated as the state water pollution control agency for all purposes under the CWA. The California Water Code (CWC), Article 4 (commencing with Section 13160) of Chapter 3 of Division 7, requires the SWRCB to formulate and adopt a Water Quality Control Plan for Ocean Waters of the State (California Ocean Plan). The SWRCB and the six coastal regional water quality control boards (RWQCB) implement and interpret the California Ocean Plan (refer to Section 13.3.2.4 for additional information about the California Ocean Plan).

In addition to the California Ocean Plan, the CWA outlines a nationwide permit system to regulate point source discharges (CWA Section 401). This is the basic regulatory and enforcement mechanism for the CWA. The EPA has the nationwide authority to implement the CWA. However, states may be authorized to administer various aspects of the NPDES and pretreatment programs and to carry out other important CWA program implementation functions. California is authorized to administer the EPA's NPDES permit program. The SWRCB is responsible for implementing this authority and issuing NPDES permits. NPDES permits are issued and administered through the state's RWQCBs. The ultimate goal of the NPDES program is to ensure water quality standards. The NPDES program was expanded in 1987 to regulate stormwater discharges (runoff) originating from municipal and industrial sources.

13.3.1.2 Marine Protection, Research and Sanctuaries Act of 1972

The Marine Protection, Research and Sanctuaries Act (MPRSA) regulates the transportation and ultimate disposal of material in the ocean, prohibits ocean disposal of certain wastes without a permit, and prohibits the disposal of certain materials entirely. Prohibited materials include those that contain radiological, chemical, or biological warfare agents; high-level radioactive wastes; and industrial waste. The MPRSA has jurisdiction over all U.S. ocean waters in and beyond the territorial sea, vessels flying the U.S. flag, and vessels leaving U.S. ports. The territorial sea is defined as water extending 22 kilometers (12 nautical miles [nm]) seaward of the nearest shoreline.

With respect to the transportation and disposal of dredged materials, the EPA designates ocean disposal sites and develops the environmental criteria used in reviewing permit applications pursuant to Section 102 of the MPRSA; the Corps has permitting authority for the transportation and disposal of dredged material (subject to EPA review and concurrence that the material meets applicable ocean disposal criteria) pursuant to Section 103 of the MPRSA.

The Evaluation of Dredged Material Proposed for Ocean Disposal (EPA 1991) outlines the decision-making process regarding the suitability of sediments for disposal in marine environments, which was developed in support of mandates under the MPRSA. Four tiers are used to determine if sediment is acceptable for ocean disposal. Tier I requires evaluation of existing/historical information; however, Tiers II, III, and IV require more information gained from testing for chemicals (site-specific chemistry), sediment bioassays (grain size), water bioassays, and tissue bioaccumulation testing (site-specific chemistry, grain size, and three or four bioassay tests). Based on the characteristics of the site and the levels of information needed and obtained, state and federal agencies with permitting authority over the transport and disposal of dredged materials make the decisions as to whether the sediments are suitable for ocean disposal.

13.3.1.3 Rivers and Harbors Act of 1899

The Rivers and Harbors Act of 1899 (RHA) authorizes the Corps to maintain the capacity of navigable waters of the United States (waters of the U.S.). Section 10 of the RHA requires authorization from the Corps for work in, under, or over any navigable water of the United States including dredging and construction of structures.

13.3.1.4 Magnuson-Stevens Fishery Conservation and Management Act

The MSA was authorized in 1996 and requires the NMFS to identify, conserve, and enhance EFH for those species regulated under a federal fisheries management plan. EFH is defined as the waters and substrate necessary for fishes to spawn, breed, feed, or grow to maturity. Specifically, the MSA requires:

(1) federal agencies to consult with the NMFS on all actions or proposed actions authorized, funded, or undertaken by the agency that could adversely affect EFH; (2) the NMFS to provide conservation recommendations for any federal or state action that could adversely affect EFH; and (3) federal agencies to provide a detailed response in writing to the NMFS within 30 days of receiving EFH conservation recommendations.

The NMFS (2004) defines specific EFH terms as follows (Code of Federal Regulations [CFR], Title 50, Section 600.10):

- *Waters* include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate
- *Substrate* includes sediment, hard bottom, structures underlying the waters, and associated biological communities
- *Necessary* means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem
- *Spawning, breeding, feeding, or growth to maturity* covers a species' full life cycle.

Under the MSA, the federal government has jurisdiction to manage fisheries in the U.S. EEZ, which extends from the outer boundary of state waters (3 nm from shore) to a distance of 200 nm from shore.

FMPs are extensive documents that are constantly revised and updated. The goals of the management plans include, but are not limited to, the promotion of an efficient and profitable fishery, achievement of optimal yield, provision of adequate forage for dependent species, prevention of overfishing, and development of long-term research plans (PFMC 1998, 2008).

13.3.1.5 Marine Mammal Protection Act of 1972

The MMPA (as amended in 2007) is designed to reduce injury and mortality to marine mammals, including seals, sea lions, whales, and dolphins, caused by interaction with humans. The term *take* means to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal. The NMFS is the agency responsible for implementation of the MMPA. The NMFS is also responsible for providing stock assessment reports for all marine mammal stocks within the U.S. EEZ and for estimating the potential biological removal (PBR) level for each stock of each species. The PBR is the maximum number of marine mammals, excluding natural mortalities that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. When the PBR is exceeded, the stock is listed as "strategic," and additional conservation strategies are employed.

Under the MMPA, harassment is statutorily defined as any act of pursuit, torment, or annoyance that:

- (Level A Harassment) has the potential to injure a marine mammal or marine mammal stock in the wild; or,
- (Level B Harassment) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

For activities with no potential for mortality or serious injury (or for which mitigation can negate the serious injury or mortality), responsible parties must submit an application for an Incidental Harassment Authorization (IHA). For activities that could result in incidental take, and for which the take would result in a negligible impact, the NMFS requires an incidental take authorization, also known as a Letter

of Authorization (LOA). Both applications must be sent to the NMFS Office of Protected Resources and the applicable NMFS regional office.

A federal authorizing or action agency is required by Section 7 of the federal ESA to consult with the NMFS on any actions that might affect listed species. If the agency or the NMFS determines an action is likely to adversely affect a species (this would include any taking actions under the MMPA), formal consultation is required. The NMFS prepares a Biological Opinion (BO), which assesses whether the action is likely to jeopardize the existence of the species. The BO may include binding and/or discretionary recommendations to reduce impacts. An Incidental Take Statement (ITS) is attached to the BO as an appendix, and it is this statement that allows the incidental take. An ITS cannot be authorized for a listed marine mammal until the MMPA authorization is completed.

13.3.1.6 Endangered Species Act of 1973

The federal ESA prohibits direct harm to species that have been designated by the EPA as threatened or endangered. The federal ESA provides protection to protected species as well as their habitats. Consultation regarding protection of such species is required by Section 7 of the federal ESA to be conducted with the U.S. Fish and Wildlife Service (USFWS) and/or the NMFS prior to project implementation. If either service determines an action is likely to adversely affect a species (this would include any taking actions under the MMPA), formal consultation is required. The determination of species listed as threatened or endangered under the federal ESA is governed by Section 4 of the act. The import, take, possession, transportation, and sale of listed species are prohibited under Section 9 of the federal ESA (except as provided in Sections 6 and 10).

13.3.1.7 The Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C 668-668d) prohibits anyone, without a permit issued by the Secretary of Interior, from taking bald eagles, including their parts, nests, or eggs. The BGEPA defines *take* as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.”

13.3.1.8 Migratory Bird Treaty Act of 1918

The MBTA of 1918 (16 U.S.C. 703-712) prohibits take of migratory birds, their eggs, feathers or nets. The term *take* is defined in the MBTA to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg or part thereof. The MBTA implements the conventions between the U.S. and Great Britain (1916), Mexico (1936), Japan (1972), and Russia (1976) for the protection of migratory birds and birds in danger of extinction (USFWS 2011).

13.3.1.9 National Invasive Species Act of 1996

The National Invasive Species Act authorized the Secretary of Transportation to develop national guidelines to prevent the introduction and spread of non-indigenous species into U.S. waters via ballast water of commercial vessels. It also allows states to prepare invasive species management plans and to receive federal funding for their implementation.

13.3.1.10 Coastal Zone Management Act of 1972 and Reauthorization of 1990

The Coastal Zone Management Act (CZMA) is a federal and state partnership for management of coastal resources that encourages states to develop coastal management programs through, among other means, the federal consistency procedures of the CZMA. Upon certification of a state's coastal management program, a federal agency must conduct its activities (including federal development projects, permits and licenses, and assistance to state and local governments) in a manner consistent with the state's certified program. The federal government certified the California Coastal Management Program (CCMP) in 1977. The enforceable policies of that document are in Chapter 3 of the California Coastal Act of 1976.

The reauthorization of the CZMA in 1990 identifies nonpoint source pollution as a major factor in the continuing degradation of coastal waters. Therefore, in the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) Section 6217 was added, which calls upon states/tribes with federally approved coastal zone management programs to develop and implement coastal nonpoint pollution control programs. The Section 6217 program is administered at the federal level jointly by the EPA and the National Oceanic and Atmospheric Administration (NOAA). (EPA 2010.)

13.3.2 State

13.3.2.1 California Fish and Game Code, Section 1700

The conservation, utilization, and maintenance of oceanic biological resources for the benefit of the public are encouraged under Section 1700. The state must promote the development of local and distant-water fisheries in California under international law. Objectives include the maintenance of populations of all species of aquatic organisms to ensure their continued existence and support reasonable use.

13.3.2.2 California Endangered Species Act of 1984

Similar to the federal ESA, the California ESA provides protection to species considered threatened or endangered by the state of California. The California ESA recognizes the importance of threatened and endangered fishes, wildlife, and plant species and their habitats, and prohibits the taking of any endangered, threatened, or rare plant and/or animal species unless specifically permitted for education or management purposes. The term *take* is defined in Section 86 of the California Fish and Game Code as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

13.3.2.3 California Marine Invasive Species Act (Ballast Water Management for Control of Nonindigenous Species Act)

The California Ballast Water Management for Control of Nonindigenous Species Act was established by Assembly Bill 703 in 1999. This act went into effect on January 1, 2004, and has been amended annually since 2006. The intent of the act is to limit the introduction of nonnative species into coastal areas of the state through ballast water management. The act also requires an analysis of other vectors for release of nonnative species from vessels.

13.3.2.4 California Ocean Plan

The SWRCB adopted the first California Ocean Plan in 1972 and has since periodically revised it. The California Ocean Plan was most recently updated and adopted by the SWRCB on September 15, 2009. The revised 2009 California Ocean Plan was approved by the Office of Administrative Law on

March 10, 2010. The purpose of the plan is to protect the quality of the ocean waters for use and enjoyment of the people of the state. The plan is applicable, in its entirety, to point source discharges to the ocean, including all existing and planned wastewater treatment plant ocean outfalls. The California Ocean Plan provides for the attainment and maintenance of the water quality standards for ocean waters. This water quality control plan for the ocean waters of California regulates discharge of waste to the ocean by setting limits or levels for water quality parameters to provide reasonable protection of beneficial uses. The discharger of waste to ocean waters of California must not cause a violation of these objectives. The California Ocean Plan includes the following water quality objectives:

- Bacterial Characteristics – standards to protect water-contact recreation in coastal waters and shellfish that may be harvested for human consumption from bacterial contamination
- Physical Characteristics – standards and numerical limiting concentrations for floating particulates, grease and oil, aesthetically undesirable discoloration of the ocean surface, reduction in natural lighting (turbidity), and solids deposition
- Chemical Characteristics – standards and numerical limiting concentrations for DO and hydrogen ion concentrations; water and sediment dissolved sulfide concentrations; water and sediment concentrations for chemical substances set forth in Table B of the California Ocean Plan, including carcinogens and non-carcinogens for the protection of human health; concentrations of organic materials in marine sediments; and concentrations of nutrient materials that could cause objectionable aquatic growth or degrade indigenous biota
- Biological Characteristics – standards to protect marine communities, including vertebrate, invertebrate, and plant species; to ensure the natural taste, odor, and color of fish and shellfish, or other resources used for human consumption; and to ensure that the concentration of organic materials in fish and shellfish or other marine resources used for human consumption do not bioaccumulate to levels that are harmful to human health
- Radioactivity – standards to ensure that radioactive waste does not degrade marine life

The water quality objectives apply to areas within the waste plume where initial dilution has occurred. Methods for implementing the program are also described. Discharges to inland waters and enclosed bays and estuaries are not covered, nor are vessel wastes or dredged material. The California Ocean Plan contains specific criteria for the management of waste discharged to the ocean and for monitoring outfall compliance with California Ocean Plan standards.

13.3.2.5 Porter-Cologne Water Quality Control Act (California Water Code, Section 13000 et seq.; California Code of Regulations, Title 23, Chapters 3 and 15)

Since 1973, the California SWRCB and its nine RWQCBs have been delegated the responsibility for administering permitted discharges into the coastal marine waters of California. The Porter-Cologne Water Quality Act (Porter-Cologne) provides a comprehensive water-quality management system for the protection of California waters and regulates the discharge of oil into navigable waters by imposing civil penalties and damages for negligent or intentional oil spills. Under the act “any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state” must file a report of the discharge with the appropriate RWQCB. Pursuant to the act, the regional board may then prescribe waste discharge requirements (WDRs) that add conditions related to control of the discharge. Porter-Cologne defines *waste* broadly, and the term has been applied to a diverse array of materials, including non-point source pollution. Any activity that results or may result in a discharge that directly or indirectly impacts waters of the state or the beneficial uses of those waters are subject to

WDRs, while CWA Section 404 permits and CWA Section 401 certifications are only required when the activity results in fill or discharge directly below the ordinary high water line of waters of the U.S. When regulating discharges that are included in the federal CWA, the state essentially treats WDRs and NPDES permits as a single permitting vehicle, and rely on the 401 certification process. In April 1991, the SWRCB and other state environmental agencies were incorporated into the California EPA.

13.3.2.6 California Coastal Act of 1976

The California Coastal Act declares that the California Coastal Zone is a distinct and valuable resource of vital interest to all the people and exists as a balanced ecosystem. It created the California Coastal Commission and requires local governments to prepare a local coastal program (LCP) for those parts of the coastal zone within local government jurisdictions. The California Coastal Commission retains permanent coastal permit jurisdiction over development proposed on tidelands, submerged lands, and public trust lands, and also acts on appeals from certain local government coastal permit decisions. The Commission reviews and approves any amendments to previously certified local coastal programs (CCC 2010).

Additionally, the act identifies the enforceable policies of the CCMP in Chapter 3 of the California Coastal Act. The CCMP is a combination of federal, state, and local planning and the regulatory authorities for controlling the uses of land, air, and water resources along the coast (CCC no date).

13.3.2.7 California Toxics Rule 2000

The California Toxics Rule establishes numeric criteria for priority toxic pollutants in inland waters as well as enclosed bays and estuaries to protect ambient aquatic life (23 priority toxics) and human health (57 priority toxics). The rule also includes provisions for compliance schedules to be issued for new or revised NPDES permit limits when certain conditions are met. The numeric criteria are the same as those recommended by the federal EPA in CWA Section 304(a).

13.3.2.8 California Construction General Permit

The SWRCB has developed a construction stormwater program that requires dischargers whose projects disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, to obtain a general permit (Construction General Permit Order 2009-0009-DWQ) for construction activities (SWRCB 2011, SWRCB 2009). The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that specifies best management practices (BMPs) to prevent or minimize all construction pollutants from contacting stormwater with the intent of keeping all products from moving off site into receiving waters. The BMPs are also designed to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the U.S. Monitoring is performed to determine the effectiveness of BMPs in reducing or preventing pollutants (including non-visible pollutants) in stormwater discharges from causing or contributing to exceedances of water quality objectives. The requirements for the Industrial General Permit are similar to those for construction.

The EPA defines BMPs as “schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the U.S. BMPs include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage” (40 CFR Section 122.2).

13.3.2.9 Oil Spill Prevention and Response (California Code of Regulations, Title 14, Division 1, Subdivision 4, Chapter 3)

The California Office of Spill Prevention and Response (OSPR) is a multi-agency effort including the U.S. Coast Guard, the California State Lands Commission, and the CDFG's Marine Safety Branch (MSB, the lead agency). OSPR requires all marine facilities and tank vessels carrying petroleum products as cargo, and all non-tank vessels over 300 gross tons, to have a California approved oil spill contingency plan.

13.3.2.10 Marine Life Management Act and Marine Life Protection Act

The Marine Life Management Act of 1998 (MLMA) created a broad, programmatic framework for managing fisheries in California state waters through a variety of conservation measures, including MPAs. The Marine Life Protection Act of 1999 (MLPA) established a programmatic framework for designating such MPAs in the form of a statewide network. The overriding goal of these acts is to ensure the conservation, sustainable use, and restoration of California's marine resources. Unlike previous laws, which focused on individual species, these acts focus on maintaining the health of marine ecosystems and biodiversity in order to sustain resources. These laws are administered by the CDFG. MPAs are areas of the ocean set aside to protect and restore habitats; conserve biodiversity; provide a refuge for marine species; develop recreational, scientific, and educational opportunities; and reestablish fisheries.

There are three levels of MPAs, each with its varying levels of protection: state marine reserves, marine conservation areas, and state marine parks. State marine reserves prohibit the take of all living, geological, and cultural resources. Marine conservation areas prohibit specific commercial and/or recreational take of living, geological, and cultural resources on a case-by-case basis. Finally, state marine parks prohibit commercial take of living, geological, and cultural resources but allow recreational fishing, although restrictions may apply. *Take*, as applied to MPAs, can be direct or indirect, and is defined as to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

On December 15, 2010, the California Fish and Game Commission adopted regulations to create a new suite of 36 MPAs encompassing 187 square miles (8 percent) of state waters in Southern California (excluding the northern Channel Islands). Following this approval, the MPA regulations are anticipated to go into effect in mid-2011, after review by the Office of Administrative Law and the Secretary of State. (CDFG 2010b, 2010c)

13.3.3 Regional

13.3.3.1 Water Quality Control Plan, Los Angeles Region

The Water Quality Control Plan, Los Angeles Region (Basin Plan) (LARWQCB 1994) is designed to preserve and enhance water quality and to protect beneficial uses of regional waters (inland surface waters, groundwater, and coastal waters such as bays and estuaries). The Basin Plan designates beneficial uses of surface water and groundwater, such as contact recreation or municipal drinking water supply. The Basin Plan also establishes *water quality objectives*, which are defined as "the allowable limits or levels of water quality constituents or characteristics that are established for the reasonable protection of beneficial uses of water or the prevention of nuisance in a specific area."

The Basin Plan specifies water quality objectives for a number of constituents/characteristics that could be affected by the project or its alternatives. The constituents include: bioaccumulation, biostimulatory substances, chemical constituents, DO, oil and grease, pesticides, pH, PCBs, suspended solids, toxicity,

and turbidity. With the exceptions of DO and pH, water quality objectives for most of these constituents are expressed as descriptive rather than numerical limits. For example, the Basin Plan defines limits for chemical contaminants in terms of bioaccumulation, chemical constituents, pesticides, PCBs, and toxicity as follows:

- Toxic pollutants shall not be present at levels that bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health.
- Surface waters shall not contain concentrations of chemical constituents in amounts that adversely affect any designated beneficial use.
- No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life.
- All waters shall be maintained free of toxic substances in concentrations that are toxic to, or produce detrimental physiological responses in, human, plant, animal, or aquatic life. There shall be no chronic toxicity in ambient waters outside mixing zones.

The Basin Plan also specifies water quality objectives for other constituents, including ammonia, bacteria, total chlorine residual, and radioactive substances.

13.3.3.2 Los Angeles Regional Contaminated Sediment Task Force

The Los Angeles Regional Contaminated Sediment Task Force (CSTF) is a multi-agency task force established by the state of California to assist in the preparation of a long-term management plan for dredging and disposal of contaminated sediments in the Los Angeles Area. The CSTF includes representatives from the Corps, EPA, California Coastal Commission, Los Angeles Regional Water Quality Control Board (LARWQCB), CDFG, Port of Long Beach, Port of Los Angeles, city of Long Beach, Los Angeles County Department of Beaches and Harbors, Heal the Bay, and other interested parties. The CSTF consists of an Executive Committee, a Management Committee, five Strategy Development Committees, a Technical Advisory Committee, and an Interim Disposal Advisory Committee (CCC 2011; Los Angeles Basin CSTF 2011). The Executive Committee of the CSTF consists of the head of the four regulatory agencies responsible for managing dredging activities in the region (Corps, EPA, LARWQCB, and California Coastal Commission). The advisory Committee of the CSTF is made up of various other member agencies and is responsible for evaluating and resolving issues related to specific contaminated sediment dredging projects. The CSTF was responsible for developing and now implementing the Long Term Management Strategy (May 2005) for the disposal of sediment in the region. The strategy considers both aquatic and upland disposal alternatives, treatment, beneficial re-use, and other management techniques. Additionally, the plan focuses on the reduction of contaminants at their source.

13.3.3.3 Public Trust Doctrine and the California Tidelands Trust Act

The state of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon admittance into the U.S. in 1850. The California State Lands Commission retains residual and review authority for tide and submerged lands legislatively granted in trust to local jurisdictions. All tide and submerged lands, granted or ungranted, as well as navigable rivers, sloughs, etc., are governed by the Common Law Public Trust. The public trust is a sovereign public property right held by the state or delegated trustee for the benefit of all the people.

The sovereign tide and submerged lands of the Port of Los Angeles were legislative granted, in trust, to the city of Los Angeles pursuant to the 1911 California Tidelands Trust Act. The city, acting by and through the Port as a trustee of the legislatively granted sovereign trust lands, must ensure that the specific uses proposed on these trust lands are consistent with the provisions of the relevant granting status and the Public Trust Doctrine. Submerged lands and tidelands within the Port of Los Angeles and administered by the Los Angeles Harbor Department to promote and develop commerce, navigation, and fisheries, and other uses of statewide interest and benefit, including commercial, industrial, and transportation uses; public buildings and public recreational facilities; wildlife habitat; and open space.

13.3.4 Local

The discharge of treated effluent from the JWPCP is regulated by requirements established by the state, legislation for implementing those requirements, and specific discharge limitations.

An NPDES permit authorizes a facility to discharge flow into receiving waters. The NPDES permit provides limitations on the discharge to ensure that beneficial uses of the receiving waters are protected (EPA 1996). In California, NPDES permits are issued by the RWQCB for discharges to waters within each of nine major regions. The JWPCP discharge occurs within the Los Angeles Region and is regulated by the LARWQCB and the EPA. The NPDES permit is renewed every 5 years, and the 2006 permit for the JWPCP was recently renewed in 2011. These permits are included as Appendix 13-E and Appendix 13-F, respectively. The requirements of the 2011 permit are similar to those of the 2006 permit (Sanitation Districts 2011b).

Water quality objectives and effluent limits in the NPDES permit are based on the plans, policies, and water quality standards in the Basin Plan and the California Ocean Plan. The permit establishes effluent limitations that incorporate various CWA requirements designed to protect and enhance water quality.

The EPA or states within an approved NPDES program are authorized under CWA Section 402 to issue NPDES permits. These state and federal laws and policies are designed to ensure that receiving waters would not be degraded by permitted discharge, except under the conditions established in the state antidegradation policy and the federal regulation. The provisions of the JWPCP NPDES permit are consistent with the antidegradation policies.

Also, the RWQCB has been implementing a watershed management approach to address water quality protection in Los Angeles and Ventura counties. The objective is to provide a comprehensive and integrated strategy resulting in water resource protection, enhancement, and restoration, while balancing economic and environmental impacts within a hydrologically defined drainage basin or watershed. The Watershed Management Approach emphasizes cooperative relationships between regulatory agencies, the regulated community, environmental groups, and other stakeholders in the watershed to achieve the greatest environmental improvements with the resources available.

The JWPCP NPDES permit includes comprehensive monitoring and reporting (Appendix 13-E; Appendix 13-F). The permit also incorporates standard provisions and monitoring and reporting requirements applicable to permittees, including a monitoring program. Among other things, a discharger covered by the permit must comply with all conditions in the permit, and any instance of noncompliance is deemed to constitute a violation of the CWA and the CWC. Violators are subject to fines and other penalties that may include permit termination, revocation and reissuance, and modification or denial of a permit renewal.

For a major discharge, such as the discharge from the JWPCP, a variety of NPDES permit requirements are employed, including both effluent and receiving water limits and requirements for certain treatment processes (Appendix 13-E; Appendix 13-F). Effluent limitations are required for pollutants that are determined by the RWQCB to be discharged at a level that may cause or contribute to an excursion above a water quality standard (SWRCB 2005). The RWQCB conducts a statistical analysis using historical monitoring data to determine which pollutants in a discharge have the "reasonable potential" to cause or contribute to an exceedance of a water quality objective, and develops numeric effluent limitations for those pollutants based on applicable water quality standards (SWRCB 2005). For constituents that have not been determined to have "reasonable potential," narrative statements are included in the NPDES permit requiring that the discharge comply with applicable water quality requirements based on the California Ocean Plan requirements (Appendix 13-E; Appendix 13-F).

For NPDES regulatory purposes, pollutants discharged from the JWPCP are grouped into three general categories: conventional, toxic, and non-conventional (Appendix 13-E; Appendix 13-F). Effluent limitations for all three categories of pollutants are set based on specifications in the California Ocean Plan (SWRCB 2005) and secondary treatment standards outlined in 40 CFR Section 133.102. The discharge requirements set forth in the JWPCP NPDES permit consist of the following:

- Limitations on the types of materials to be discharged from each outfall
- Effluent limitations and performance goals for each outfall
- Mass emissions caps
- Receiving water limitations

13.4 Environmental Impacts and Mitigation Measures

13.4.1 Methodology and Assumptions

This section evaluates environmental impacts resulting from both the construction and operation of the project for each alternative. The primary project activities that could potentially affect the marine environment are:

- Construction of a riser
- Construction of a diffuser
- Improvements to existing ocean outfalls
- Operation of the new ocean discharge system

All of the program elements are located outside the marine environment; some of the project elements are located within the marine environment. Only the project elements within the marine environment are discussed in the analysis.

The methodology and assumptions associated with the construction and operation of the project elements are described in detail in the following sections. Data provided in this chapter has been updated to include the latest available information and supplements Appendix 13-A.

13.4.1.1 Construction Methodology and Assumptions

The project area analyzed for construction impacts associated with the offshore risers, diffusers, and existing ocean outfalls is defined as the area of direct and indirect marine impacts of all construction activities (including dredging and rock placement). Construction impacts on biota were assessed by (1) reviewing the water quality and sediment analyses presented in the regional and project settings and Appendix 13-A, (2) reviewing existing studies of sediment and water quality in Southern California, (3) estimating the amount and type of habitat that would be disturbed, (4) determining the biological resources that may be present or may use the affected habitats, and (5) drawing on expertise and judgment.

The construction impacts associated with underwater sound were analyzed using methods for evaluating underwater sound from pile driving developed by the California Department of Transportation (Caltrans) and the NMFS. Impact criteria used in the analysis come from a summary of thresholds published by the Washington State Department of Transportation (Caltrans 2009; NMFS 2009; WSDOT 2009). Because of the large size of the steel tubes and the location of the installation (several miles offshore), the riser driving does not fall within the range of projects that have been previously analyzed. Accordingly, some degree of extrapolation and estimation was used for the riser construction assumptions. See Appendix 13-G for a discussion of the assumptions. Although sound volume produced depends on local conditions, impact distances were estimated for cetaceans, pinnipeds, diving seabirds (using levels determined for the marbled murrelet, which are used as a surrogate for all diving birds), and fishes. The analysis assesses three possible construction activities associated with the generation of underwater sound that are described in detail in the analysis section: jack-up barge pile driving, inner riser pile driving, and outer riser pile driving. Underwater sound impacts are estimated at specific distances from the sound source within which an animal is likely to be injured or is potentially startled or harassed.

Construction impacts associated with beneficial uses were assessed using qualitative means by relying on the construction activities and impacts related to those activities and determining whether the beneficial use actually existed at the construction area or if the activities have the potential to have an impact on an existing beneficial use outside of the construction area.

The impact assessment for construction activities assumes the following requirements would be followed:

Table 13-11. Assumptions and Requirements for Marine Construction Activities

Project Element	Construction Activity Subject to Regulation	Applicable Environmental Regulation	Responsible Agency	Purpose
Riser/Diffuser – SP Shelf PV Shelf	Dredging and placement of riser/diffuser structures within waters of the U.S. (i.e., discharge of fill in waters of the U.S.)	Section 401 of the CWA	LARWQCB[a]	Section 401 of the CWA, Water Quality Certification ensures that discharge of dredge or fill materials in waters of the U.S. is in compliance with state water quality standards.
Riser/Diffuser – SP Shelf PV Shelf	Dredging and placement of riser/diffuser structures within waters of the U.S. (i.e., discharge of fill in waters of the U.S.)	Section 404 of the CWA	Corps	Section 404 of the CWA regulates discharge of dredge or fill materials in order to minimize impacts to the physical, chemical, and biological environment through avoidance, minimization, and compensation measures that are incorporated as permit conditions.

Table 13-11 (Continued)

Project Element	Construction Activity Subject to Regulation	Applicable Environmental Regulation	Responsible Agency	Purpose
Riser/Diffuser – SP Shelf PV Shelf	Transport of materials in navigable waters of the U.S.	Oil Spill Prevention and Response	CDFG (California Office of Spill Prevention and Response)	A spill prevention and control plan would be required for marine vessels carrying petroleum and nontank vessels over 300 gross tons. The plan would detail and implement spill prevention and control measures.
Riser/Diffuser – SP Shelf PV Shelf	Work and placement of structures in navigable waters of the U.S.	Section 10 of the RHA	Corps	Section 10 of the RHA protects navigation channels and lanes through regulation of work and structures in navigable waters of the U.S.
Riser/Diffuser – SP Shelf PV Shelf	Transport and disposal of dredge material	Section 103 of the MPRSA	Corps	Section 103 of the MPRSA regulates the transport and ocean disposal of dredge material in order to protect human health and the health of the marine environment.
Riser/Diffuser – SP Shelf PV Shelf	Pile driving of inner and outer riser casings	MMPA	NMFS	The MMPA protects marine mammals through regulation of activities that could result in the take or harassment of marine mammals.
Riser/Diffuser – SP Shelf PV Shelf	Dredging and pile driving of inner and outer riser casings	Magnuson-Stevens Fishery Act	NMFS	The MSA protects EFH.
Rehabilitation of the Existing Ocean Outfalls	Placement of ballast over the existing ocean outfalls (i.e., discharge of fill in waters of the U.S.)	Section 401 of the CWA	LARWQCB[a]	Section 401 of the CWA, Water Quality Certification ensures that discharge of dredge or fill materials in waters of the U.S. is in compliance with state water quality standards.
Rehabilitation of the Existing Ocean Outfalls	Placement of ballast over the existing ocean outfalls (i.e., discharge of fill in waters of the U.S.)	Section 404 of the CWA	Corps	Section 404 of the CWA regulates discharge of dredge or fill materials in order to minimize impacts to the physical, chemical, and biological environment through avoidance, minimization, and compensation measures that are incorporated as permit conditions.
Rehabilitation of the Existing Ocean Outfalls	Placement of ballast over the existing ocean outfalls (i.e., discharge of fill in waters of the U.S.)	Magnuson-Stevens Fishery Act	NMFS	The Magnuson-Stevens Fishery Act protects EFH.

[a] RWQCB-Los Angeles Region (Region 4) has jurisdiction in the project area.

These assumptions are incorporated in the analysis. Therefore, impacts are those outcomes that might occur despite these assumptions.

Suitable dredge and tunnel spoils as a result of construction activities would be disposed of at LA-2 or LA-3, or sidecast, if practicable, for graded seafloor sediments. If the material is not suitable for ocean disposal, it would be appropriately disposed of onshore. LA-2 and LA-3 are permanent offshore ocean sites approved by the EPA for the disposal of dredge materials from projects located within Los Angeles and Orange Counties. Figure 3-26 locates both LA-2 and LA-3 off the coast of Southern California. The Southern California Dredge Material Management Team (SC-DMMT)[8] would determine the suitability of

[8] The SC-DMMT is an inter-agency body comprised of state and federal agencies that have direct permitting authority over dredging projects, and other stakeholder agencies. SC-DMMT member agencies include the EPA, the Corps (Los Angeles District), the California Coastal Commission, and SWRCB, among others. The primary

the sediment based on sediment testing and characterization requirements outlined in the Ocean Testing Manual, a joint guidance prepared by the EPA and the Corps. This decision and approval for ocean disposal is made as part of the CWA Section 404 permitting process. Management of sediments found to be unsuitable for disposal at the LA-2 or LA-3 disposal sites or for sidecasting or seafloor grading would be consistent with practices outlined in the CSTF long-term management strategy to appropriately handle and dispose of contaminated sediments.

Environmental effects of placing suitable dredge materials at either LA-2 or LA-3, including potential placement of dredge materials associated with Clearwater project alternatives, were previously evaluated by the environmental impact statement for LA-3. For the purposes of the analysis in this chapter, the Draft Environmental Impact Statement for the Proposed Site Designation of the LA-3 Ocean Dredged Material Disposal Site off Newport Bay, Orange County, California (LA-3 DEIS), prepared by the EPA and the Corps, Los Angeles District (December 2004) is incorporated herein by reference. The Final Environmental Impact Statement for the Proposed Site Designation of the LA-3 Ocean Dredged Material Disposal Site off Newport Bay, Orange County, California, was adopted in September 2005. The LA-3 DEIS analyzed the impacts associated with the proposed designation of LA-3 as a permanent site for the ocean disposal of dredged materials and the continued operation of LA-2 (also known as the Preferred Alternative [Alternative 3]). The LA-3 site is used in conjunction with the LA-2 site for the disposal of dredged material originating from projects located within Los Angeles and Orange Counties. The relevant analysis for the LA-3 DEIS Preferred Alternative included in the LA-3 DEIS and incorporated into this chapter is associated with the following resources: marine environment (biological, physical, and chemical), public health and welfare, and socioeconomics.[9]

13.4.1.2 Operation Methodology and Assumptions

The project area analyzed for impacts associated with the operation of a new ocean discharge system is defined as the location of all risers and diffuser-related structures, as well as the ZID of the effluent discharge. Operational impacts on biota were assessed by using the same methodology previously described for construction. Operational impacts associated with beneficial uses were assessed using qualitative means by relying on the operational activities and impacts related to those activities and determining whether the beneficial use actually exists at the operation location or if the activities have the potential to have an impact on an existing beneficial use outside of the operation area.

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purpose of the SC-DMMT is to expedite reviews and approvals of dredging projects through monthly inter-agency meetings.

[9] This analysis is included in Chapter 4 of the LA-3 DEIS on pages 4-1 to 4-5, 4-14 to 4-32, and 4-38. Additionally, the cumulative analysis associated with the marine environment (biological, physical, and chemical), public health and welfare, and socioeconomics associated with the Preferred Alternative is included in Chapter 4 of the LA-3 DEIS on pages 4-76 to 4-79. Finally, the relationship between short-term and long-term resource use and the irreversible or irretrievable commitment of resources on pages 4-80 to 4-81 of Chapter 4 of the LA-3 DEIS is applicable. Appendix A of the LA-3 DEIS is also relevant to this chapter because it describes the Site Management and Monitoring Plan (SMMP) implemented as part of the operation of LA-3 and the requirements of the SMMP that are applied to each permitted disposal of dredged materials. The analysis in the LA-3 DEIS is relevant to the Clearwater Program analysis because construction of the offshore tunnel in Alternatives 1, 2, and 3 could require ocean disposal of the excavated material, making use of either LA-3 or LA-2. The quantity of excavated material is defined in Chapter 3 and would not exceed the maximum limits of either LA-3 or LA-2. Therefore, because the LA-3 DEIS analyzed the marine biological, chemical, and physical impacts; public health and welfare impacts; and socioeconomics impacts associated with disposing of dredged materials at LA-3 and LA-2, this chapter incorporates the analysis by reference and does not provide additional information.

Furthermore, the impact analysis for operation assumes the following:

- All effluent discharged from any of the alternative outfall sites would, at a minimum, be treated to levels consistent with the effluent currently discharged through the existing ocean outfalls.
- For operation of the new riser and diffuser, the Sanitation District's existing NPDES individual permit for wastewater treatment discharges would be updated.
- NPDES requirements for all discharge alternatives would be no less protective of the beneficial uses of the receiving waters than the current NPDES permit, and the Sanitation Districts would have to comply with either the existing NPDES permit or an updated permit for the new riser and diffuser (see Section 13.3).
- The physical characteristics of the effluent released on the SP Shelf and PV Shelf would be the same as the existing effluent characteristics despite any change in location or change in depth of release (between 175 and 200 feet).

13.4.1.3 Baseline

CEQA Baseline

The CEQA baseline for the project is described in Section 1.7.4.1. The CEQA baseline consists of the existing conditions of the marine environment at all sites where the project elements would be constructed, including the riser and diffuser areas and the existing ocean outfalls. The reference date for the CEQA baseline is 2008 when the notice of preparation of this EIR/EIS was released for public review.

NEPA No-Federal-Action Baseline

The NEPA baseline for the project is described in Section 1.7.4.2. The NEPA baseline is not bound to a "no growth" scenario. Therefore, the NEPA baseline may include increases in operations over the life of a project that do not require federal action or approval.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

13.4.2 Thresholds of Significance

The project would pose a significant impact if it exceeds any of the following thresholds for marine environment (MAR):

MAR-1. Creates pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or causes regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge.

MAR-2. Substantially degrades marine sediment quality or character.

MAR-3. Results in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern.

MAR-4. Results in the substantial degradation or disruption of marine habitat or local biological communities.

MAR-5. Interferes with the movement/migration corridors of marine biota.

MAR-6. Adversely affects public health.

MAR-7. Impairs beneficial uses designated in the California Ocean Plan.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on the marine environment before mitigation. Table 13-12 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 13-12 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal-Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 13-12. Thresholds Evaluated

		Threshold						
	Alt.	**MAR-1**	**MAR-2**	**MAR-3**	**MAR-4**	**MAR-5**	**MAR-6**	**MAR-7**
Project Element								
Royal Palms Shaft Site	4							X
SP Shelf Riser/Diffuser Area	1	X	X	X	X	X	X	X
PV Shelf Riser/Diffuser Area	2,3	X	X	X	X	X	X	X
Existing Ocean Outfalls Riser/Diffuser Area	1–4	X	X	X	X	X	X	X
Emergency Discharge	5,6	X	X	X	X		X	X
Alt. = alternative								

In the alternatives analysis that follows, if a project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears.

Because of the interdisciplinary nature of marine resources, some cross-referencing and comingling of analysis occurs under each threshold. For example, water quality and sediment, which are discussed in detail under Impacts MAR-1 and MAR-2, could have an effect on marine mammals and communities, which are discussed under Impacts MAR-3 and MAR-4. Therefore, water quality and sediment information is presented in Impact MAR-3, as it relates to protected species and habitat, and Impact MAR-4, as it relates to local biological communities and habitat.

Shaft sites would be required along each alignment to facilitate tunnel construction. All shaft sites would be constructed on land, and there would be no effects on the marine environment from their construction or use. However, construction at the Royal Palms shaft site (Alternative 4) would occur adjacent to marine waters and thus has the potential to impact the marine environment. Therefore, Impact MAR-7 is analyzed for potential impacts on designated beneficial uses associated with construction at Royal Palms Beach. Similarly, tunnels would be constructed to connect to the riser and diffuser areas; however, the

tunneling would be performed under the seafloor; therefore, there would be no effects on the marine environment from their construction or use.

13.4.3 Alternative 1

13.4.3.1 Program

Alternative 1 (Program) does not include marine elements and, therefore, has no potential to have an impact on the marine environment.

13.4.3.2 Project

Impact MAR-1. Would Alternative 1 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

Construction on the SP Shelf would take approximately 3 years, likely beginning in 2019 and ending in the 2021. The majority of the riser and diffuser construction work would be based on one 10-hour shift per day, 5 days per week. A jack-up barge would first be anchored at the construction location, stabilized by pilings driven into the seafloor. This barge would be the primary location for beginning all construction activities related to the riser and diffuser. A riser would then be constructed to physically connect the submarine tunnel to seafloor diffuser legs. The riser would be made of steel with a concrete lining. The riser inner casing diameter would be approximately 13 feet and the outer casing diameter would be approximately 16 feet. The casing would be driven into the seafloor to the depth of the submarine tunnel, extending through the water column to the sea surface. The construction casing would extend approximately 30 feet (9 meters) or more above the sea surface, allowing additional water in the casing to provide positive head pressure in the casing during construction. The riser configuration is shown on Figure 3-24.

Sediments within the riser casing would be removed by mechanical means. Sediments excavated for the riser vault structure would not be exposed to the open ocean, but would pass only through the water column contained within the casing during the excavation and removal process. Similarly, material for the submarine tunnel tie-in structure would be transported through the casing, limiting exposure to the open ocean (with the possible exception of exposure at the sea surface during transfer of excavated sediments from the riser to the transport barge). The submarine material would be removed and could be disposed of at the LA-2 or LA-3 disposal sites. Construction within the casing is estimated to take approximately 21 months.

Following excavation and construction of the riser, the water column casing would be removed, leaving the diffuser riser head structure, which would be positioned approximately 20 feet (6 meters) above the surrounding seafloor. Casing removal would release the contained water to the open ocean. This release

of casing water would require an NPDES permit and compliance with discharge requirements as defined in the permit.

Ballast rock would be placed within a 75-foot radius around the riser head to protect the structure. The seafloor diffuser would be constructed of steel pipe, reinforced concrete pipe (RCP), or high-density polyethylene (HDPE) pipe. Each of these would include diffuser ports that would be spaced to facilitate initial dilution and distribution of the treated effluent.

If the diffuser were constructed of steel or RCP, it would have two legs oriented out of the riser head, 120 or 180 degrees apart, with each leg approximately 4,000 feet long. The inner diameter of the steel or RCP diffuser would incrementally decrease in size from approximately 132 inches to 48 inches. The steel and RCP diffuser configurations are shown on Figure 3-25. Installation of the steel or RCP diffuser would require seafloor grading and possibly trenching or dredging for site preparation. The trenched materials would be sidecast, if feasible. Sidecasting involves excavating seafloor sediments from the construction site with a clamshell dredge, raising and moving the clamshell away from the excavation site and releasing the sediments above the seafloor. The diffuser installation could also require construction of a roadbed base of ballast rock. The roadbed would be placed either in the trench or on the graded seafloor. The diffuser would be placed on the roadbed with additional ballast rock up to the center of the pipe for stability. The riser and diffuser would cover a seafloor area of approximately 5 to 10 acres, depending on the required roadbed width.

If HDPE pipe were used for the diffuser, no trenching would be required. The HDPE pipe would be placed directly on the seafloor, which could require some minor grading. There would also be a limited amount of ballast rock required to protect the piping and riser. The HDPE design would consist of a manifold with eight diffuser legs, four on each side of the manifold, configured in a sequentially staggered array from shortest (1,000 feet) to longest (4,000 feet). The HDPE diffuser configuration is shown on Figure 3-25. The riser, manifold, and diffuser would cover a seafloor area of approximately 8 acres.

When the prefabricated riser assembly is transported to the installation site, the construction work would take place on a continuous 24-hours-per-day basis for approximately 1 week. All of the work – including mobilization, preassembly, site preparation, construction, and demobilization – would take approximately 24 months for the riser and 6 to 12 months for the diffuser (depending on the type of diffuser).

Underwater construction activities for the project resulting in the discharge of fill material would require a CWA Section 404 permit from the Corps and a CWA Section 401 Water Quality Certification from the RWQCB. The water quality certification would specify receiving water monitoring requirements. Monitoring requirements typically include measurements of water quality parameters such as DO, light transmittance (turbidity), pH, and suspended solids at varying distances from the dredging operations, the mixing zone[10], or other in-water activities. The CWA Section 404 permit and the RHA Section 10 permit issued by the Corps would require that the dredger minimize the amount of water in the disposal vessel that flows back to the dredging site and would prohibit the flow back of dredged water from containing any solid dredged material. Therefore, effects from dredging would be measured *in situ*. The objective of the monitoring program is adaptive management of the dredging operations, including dredging modifications, to

[10] According to the EPA, "a mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented." The CWA Section 401 certification would define a "mixing zone" around the dredging and construction operations.

avoid potential violations of water quality objectives. If permit conditions pertaining to water quality parameters are exceeded, dredging operations would be modified to maintain water quality parameters at acceptable levels.

Construction activities would disturb and resuspend near-bottom sediments, change the levels of DO, and possibly release nutrients. These effects would result in temporary and localized changes to some water quality indicators in the mixing zone defined by the CWA Section 401 Water Quality Certification. The construction activities are expected to affect water quality in the vicinity of construction, but these changes generally would not extend beyond the mixing zone as defined in the CWA Section 401 Water Quality Certification, nor would they persist following the completion of construction.

Turbidity

Construction activities on the SP Shelf could alter water quality by generating a turbid environment at the surface of the ocean and near the bottom by increasing suspended sediment levels. Surface turbidity could result as overflow or spill when sediments within the riser casings and riser structure are brought to the surface and transferred from the top of the casing to the transport barge. Near-bottom turbidity could occur during sidecasting, grading, and placement of ballast for construction of the diffuser structure. The size and persistence of a sediment plume would depend on several factors, including sediment characteristics, water depth, and current direction and velocity. Settling rates are largely determined by the grain size of the suspended material.

Several studies have evaluated turbidity generated by underwater activities in various locations in the SCB, such as the PV Shelf and the Los Angeles Harbor. Monitoring in the Los Angeles Harbor has documented minor impacts on light transmission, DO, and pH during sediment-disturbing activities of dredging (CH2M Hill 2008:Section 3.14). In sediment plume tracking surveys conducted off Palos Verdes, near-bottom suspended sediment levels in the area of disturbance were found to approach baseline levels within 2 hours of disturbance (Fredette et al. 2002:3-29, 3-30, 3-118.). The particle settling velocities developed for dredged material fate modeling for the LA-3 DEIS also indicate particles would settle rapidly to the seafloor, as summarized in Table 13-13 (Corps 2003:4–8, 9).

Table 13-13. Description of Particle Type, Fall Velocity, and Settlement Time From a Drop of 20 Feet (6 Meters) Above the Seafloor

Particle Type	Grain Size (D_{50}) (mm)	Fall Velocity (feet/second)	Fall Velocity (meters/second)	Settling Time (approximate minutes)
Gravel	> = 1	0.9	0.27	< 1
Coarse Sand	0.5 – 0.1	0.36	0.11	< 1
Medium Sand	0.25 – 0.5	0.16	0.05	2
Fine Sand	0.13 – 0.25	0.06	0.02	5
Very Fine Sand	0.063 – 0.13	0.02	0.006	17
Silt-Clays[a]	< 0.063	0.007	0.002	50
Silt-Clays[b]	< 0.063	0.36	0.11	< 1

[a] as particles
[b] as clumps

If sidecasted, sediment generally would not be released more than 20 feet from the bottom thereby limiting the spread of sediment. As discussed in Appendix 13-A, sediments on the SP Shelf at project depths contain less than 30 percent fine material (silt and clay) compared to a mean of 45 percent fine material for midshelf stations throughout the SCB (Schiff et al. 2006), suggesting that most of the sediments suspended during sidecasting would settle to the bottom well within an hour of disturbance.

Localized areas of elevated turbidity conditions would occur in the vicinity of the near-bottom construction activities for the duration of construction. However, the studies cited suggest that near-bottom turbidity generated by construction activities on the SP Shelf is expected to settle and rapidly mix with ambient water, with normal conditions likely to be found in the area within hours to days of cessation of construction activities.

If dredged or graded seafloor sediments were found to be unsuitable for the LA-2 or LA-3 disposal sites or for sidecasting, sediments would be brought to the surface via a clamshell dredge and loaded onto a barge and appropriately disposed of at an approved onshore site. As sediment is brought up through the water column, some amount of sediment would wash out of the dredge. This is typical of all dredging operations. Therefore, water column turbidity would occur using this dredging and removal method. The process of raising these sediments from the seafloor to the dredge barge would create turbidity throughout the entire water column instead of just near bottom; however, overall, more sediments would be removed from the marine environment when compared to sidecasting. The rate of sediment settling would remain the same, which is described in Table 13-13; however, sediments would take longer to mix and diffuse through the water column.

If sediment characterization indicated presence of contaminants, sediment-disturbing activities could introduce these contaminants to the water column in concentrations exceeding water quality criteria or project-specific WDRs and/or CWA Section 401 certification requirements. Impacts would be significant before mitigation. Implementation of mitigation measure (MM) MAR-1a and MM MAR-1b would reduce impacts to less than significant.

For a discussion of the effects of surface and subsurface turbidity on protected species see Impact MAR-3 and on non-protected species see Impact MAR-4.

Dissolved Oxygen

Removal of the riser casing after construction of the diffuser vault would likely result in a temporary increase in turbidity. This water could be isolated from the open ocean for approximately 21 months with little or no phytoplankton activity. It would also likely contain some nutrients and/or organic matter derived from exposure to disturbed sediments. Accordingly, this water would have very low DO content and would contain some level of biochemical oxygen demand. Both factors would contribute to a localized impact on DO concentrations when the casing water mixes with ambient waters. However, local currents in the project area average approximately 0.1 ft/s over the entire depth of the water column, with average velocities approximately 0.4 ft/s near bottom. At 0.1 ft/s, currents are expected to mix and disperse the entrained water with ambient water over a distance of 460 feet within 1 hour of release. Within approximately 1 day, the entrained water would be diluted and dispersed over 2.2 miles, and a residual plume would likely be undetectable. Ambient water conditions would be expected in the area within hours to a day of release. Therefore, water quality impacts resulting from the removal of the riser casing would be less than significant.

Nutrients and Harmful Algal Blooms

The sediment on the SP Shelf is known to have various types and levels of nutrients from source deposition (fecal matter from marine species, aerial deposition, etc.). The sediments associated with the depths at which construction would occur on the SP Shelf would not contain substantial amounts of nutrients. Sediments would be sidecast and generally not released more than 20 feet from the bottom, thereby limiting the spread of sediment. However, nutrients could be released into the water column during construction when the sediment is disturbed. The depth of construction activities on the SP Shelf would be approximately 100 feet below the trapping layer for most of the year. This would likely prevent any nutrients from reaching phytoplankton closer to the sea surface and would prevent any blooms that

could be caused by the release of nutrients. Therefore, nutrient and HAB impacts resulting from construction on the SP Shelf would be less than significant.

Spills

A spill prevention and control plan would be required for marine vessels carrying petroleum and nontank vessels over 300 gross tons. The plan would detail and implement spill prevention and control measures. If an accidental spill were to occur, response and notification actions required by the plan would immediately be implemented. These would include efforts to contain and neutralize the spill, such as deploying floating booms to contain and absorb the spill and using pumps to assist the cleanup. Such measures would likely prevent the accidental spill from causing any persistent degradation of water quality. Therefore, significant water quality impacts are not expected to occur as a result of accidental spills of pollutants during in-water construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the SP Shelf diffuser would be similar to the existing ocean outfalls. The two possible configurations of the SP Shelf diffuser would not influence operation of the diffuser. Either configuration (i.e., RCP or steel pipe, or HDPE pipe) would discharge the treated effluent in the same manner by releasing treated effluent from ports (holes from which the treated effluent is discharged) on a continuous basis. The diffuser would be sized and permitted to accommodate the release of 400 million gallons per day (MGD) of average flow similar to the existing ocean outfalls. The composition of effluent released from the diffuser could impact the water quality of the receiving waters (Pacific Ocean).

Water Quality

An NPDES permit, required by the CWA and issued and enforced by the LARWQCB, is necessary for any effluent discharges into the Pacific Ocean. The discharger, such as the JWPCP, is permitted by the LARWQCB. The NPDES permit contains several regulatory requirements including both effluent and receiving water limits and requirements for certain treatment processes to maintain water quality in the receiving water (e.g., the Pacific Ocean) (Appendix 13-E). Effluent limitations are required for pollutants that are determined by the RWQCB to be discharged at a level that would or may cause or contribute to an excursion above a water quality standard (SWRCB 2005). The RWQCB conducts a statistical analysis using historical monitoring data to determine which pollutants in a discharge, such as metals, ammonia, or organic and inorganic chemicals, have the "reasonable potential" to cause or contribute to an exceedance of a water quality objective, and develops numeric effluent limitations for those pollutants based upon applicable water quality standards (SWRCB 2005). For constituents that have not been determined to have a "reasonable potential," narrative statements are included in the NPDES permit requiring the discharge comply with applicable water quality requirements (Appendix 13-E). Typically, the California Ocean Plan identifies the applicable water quality requirements. For NPDES regulatory purposes, measured discharge parameters/constituents from the JWPCP are grouped into general categories: major wastewater constituents, marine aquatic life toxicants, and human health toxicants (carcinogens and non-carcinogens) (Appendix 13-E). Numerical effluent limitations are set based on specifications in the California Ocean Plan (SWRCB 2005) and secondary treatment standards outlined in 40 CFR Part 133, Section 102.

The operation of the JWPCP and the physical design of the existing ocean outfalls allow the Sanitation Districts to meet the effluent limitations and performance goals outlined in the NPDES permit and maintain water quality off the coast of Southern California. The JWPCP is operated to treat wastewater to a secondary level. Secondary treatment utilizes biological processes in which microorganisms convert nonsettleable solids to settleable solids. After the effluent passes through the biological reactors, sedimentation follows, allowing the solids to settle out. All of the effluent is then disinfected using chlorination prior to its discharge to the Pacific Ocean. The permitted minimum monthly average for the initial dilution rate of treated effluent discharged from the existing 120- and 90-inch ocean outfalls is 166:1. For the existing 72- and 60-inch ocean outfalls, which are available on standby to provide hydraulic relief, the initial minimum dilutions are 150:1 and 115:1, respectively. (This is the minimum initial dilution of the treated effluent outside of the ZID after it initially mixes with ambient water.) The average depth of the current discharge is approximately 200 feet (61 meters) below the water surface. Currents at the depth where the plume is trapped by the overlying density stratification move water inshore and offshore as tides rise and fall; however, cross-shelf current speeds are relatively slow, and there is minimal net cross-shelf displacement. Alongshelf currents, while also oscillating with tides, generally have higher speeds, and frequently include a net current component that can move the plume away from the discharge point by several kilometers per day.

As part of the NPDES permit requirements, the Sanitation Districts test the effluent from the JWPCP and designated nearshore and offshore stations to ensure the JWPCP is in compliance. Monthly, quarterly, annual, and biennial reports (depending on the monitoring program) are prepared for the LARWQCB and other agencies summarizing the results and showing compliance with the NPDES permit. The JWPCP NPDES permit issued in 2011 (which is renewed every 5 years[11]) contains effluent limitations and performance goals, receiving water limitations, and monitoring and reporting provisions (Appendix 13-F). The California Integrated Water Quality System Project (CIWQS) has not reported an effluent violation from the JWPCP between 2004 and 2009 (SWRCB 2010). The JWPCP Annual Monitoring Report for 2009 (submitted to the LARWQCB on March 24, 2010) identified that the JWPCP achieved 100 percent compliance with all numeric effluent limits from 2002 to 2008, as well as in 2009 (Sanitation Districts 2010c).

Prior to placing the SP Shelf diffuser in operation, the JWPCP NPDES permit would need to be updated. The current JWPCP treatment process would not change. The SP Shelf diffuser would be constructed with diffuser ports spaced to provide an initial dilution of 166:1, or greater, which is consistent with the existing ocean outfalls. The SP Shelf diffuser would be constructed at a depth of approximately 200 feet (61 meters) below the surface, which is about the same average discharge depth as the existing ocean outfalls. The localized currents on the SP Shelf would generally move the discharged effluent plume primarily upcoast. The Sanitation Districts would continue to regularly monitor for all the constituents identified in the current NPDES permit. Because the operation of the JWPCP would not change and the SP Shelf diffuser would be designed to perform equal to, or better than, the existing ocean outfalls, impacts on water quality from the operation of the SP Shelf diffuser would be less than significant.

Nutrients and Harmful Algal Blooms

As discussed in Section 13.2.1.1 and in Appendix 13-A and Appendix 13-B, there has been no obvious link established between anthropogenic inputs, including ocean discharges, and increase in phytoplanktonic HABs. However, HABs have been a concern in the SCB and thus on the SP Shelf because of their increased frequency and severity in recent years. HABs can result in the production of

[11] A new permit was adopted in September 2011, and the Sanitation Districts must comply with the conditions of this permit.

toxins at levels that can bioaccumulate and cause illness and death in higher food chain animals (Appendix 13-B). Domoic acid, produced by several species of the phytoplankton diatom *Pseudo-nitzchia*, is the most commonly occurring and most serious of the HAB-related toxins. Domoic acid poisoning results in a condition called amnesic shellfish poisoning, which is a serious threat to marine wildlife populations along the California coast (see Impact MAR-3 for additional discussion of how HABs may impact protected species).

There is no established connection between nutrient contributions from JWPCP effluent and HABs. Water column data collected over 4 years during monitoring of the existing ocean outfall discharges was recently reviewed (Appendix 13-B). The analysis confirmed that the majority of phytoplankton is typically found in the upper water column, while the effluent plume is normally trapped below a density stratification layer at deeper depths and, therefore, is unavailable to the phytoplankton (Appendix 13-B). Between November 2002 and November 2008, local upwelling may have occasionally pushed the trapping layer up to depths that make the nutrients in the discharge available to phytoplankton; however, no increase in phytoplankton levels was associated with the effluent plume. In addition, no association between the JWPCP discharge and HABs was detected.

Accordingly, it is very unlikely that the JWPCP discharges would affect HABs in the vicinity of the proposed SP Shelf diffuser. At greater distances from the discharge, nutrients from the effluent would be greatly diluted via mixing and transport processes by the time the plume reached depths shallow enough to influence phytoplankton productivity. The nutrients would become entrained with naturally nutrient-rich deep ocean waters that upwell along coastlines within the SCB, and that contain about 25 times as much nitrogen and other nutrients as do JWPCP outfall discharges. It follows that minor changes in ocean circulation and upwelling rates would have a much higher potential to affect HABs by altering nutrient flux than do any foreseeable changes in outfall discharges. Moreover, modifying nutrient availability in an area does not simply alter the HAB frequencies. Studies in Monterey Bay (Ryan et al. 2005) have shown that the causes of HABs are complex and subtle, involving numerous exogenous and some endogenous factors. Schnetzer et al. (2007), working in San Pedro Bay and the Los Angeles Harbor, have also shown that HABs are not easily predicted and do not simply respond to nutrient changes; indeed, they note research showing higher algal toxin production in nutrient-limited settings.

If nutrients from the JWPCP and other SCB discharges were associated with HABs, the events would likely have been present in the SCB for decades. Because operational volumes and effluent quality discharged through the proposed SP Shelf diffuser would be similar to existing discharge conditions at the existing ocean outfalls, and discharge depths and predicted trapping depths are comparable with the existing JWPCP discharge site, it is unlikely that relocating the JWPCP discharge would cause any change in the phytoplankton response between sites and thereby result in HABs (Appendix 13-B).

In summary, because operational volumes and effluent quality discharged through the new SP Shelf diffuser would be similar to existing conditions, and discharge depths and predicted trapping depths are comparable to the existing ocean outfalls, it is unlikely that similar discharge on the SP Shelf would result in pollution, contamination, nuisance, or violation of regulatory standards. The new ocean discharge system would comply with NPDES provisions, which prohibit contamination, pollution, or nuisance. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

The rehabilitation of the existing ocean outfalls includes joint repairs and re-ballasting. Table 13-11 in Section 13.4.1 identifies the permits that would be required for the rehabilitation of the existing ocean outfalls. The existing ocean outfalls extend from the manifold structure at Royal Palms Beach. The re-ballasting work would occur on the existing 72-, 90-, and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet (6 to 15 meters). A small derrick barge would be used to place the ballast rock around the outfalls and support the joint repair work. Joint repairs would involve temporarily removing some of the existing ballast rock from around the outfalls to fully expose the joint. A coupling would be installed, and the annular space filled with either concrete or epoxy. The ballast rock would then be replaced around the pipe. It is estimated that in-water construction would take approximately 2 months. All of the rehabilitation work – including mobilization, construction, and demobilization – would take approximately 9 months.

Turbidity

The rehabilitation of the existing ocean outfalls would not include the removal or disturbance of sediments in the project area; however, rock placement activities would result in surface and near-bottom turbidity in the immediate vicinity of the work vessels.

The existing ocean outfalls are within the EPA-designated DDT/PCB study area, which is defined as the area of the shelf and slope off the Palos Verdes Peninsula between Point Fermin and Redondo Canyon, from the shore to the 200-meter (approximately 660-foot) isobath (depth contour) (EPA 2009b). According to the EPA feasibility study, the contaminated sediments are along an identifiable deposit over 1 mile offshore at a depth of 50 meters (approximately 160 feet) to the shelf break (EPA 2009b). The sediments on the existing ballast rocks around the rehabilitation work for the existing ocean outfalls (between 20- and 50-foot depths) are most likely sparse and of recent origin, and are not expected to be contaminated by DDT. Therefore, in consultation with the EPA, the rehabilitation work would not result in adverse impacts on the DDT area of concern (White pers. comm. 2010).

Suspension of bottom sediments as a result of rock removal is expected to be limited to near the seafloor, and because current speeds are relatively low (average of 0.1 ft/s), suspended sediments are expected to settle relatively quickly and near the site of suspension. During sediment plume tracking surveys conducted during the contaminated sediment capping study (EPA 2009b), near-bottom suspended sediment levels in the area of disturbance were found to approach baseline levels within 2 hours of disturbance (Fredette et al. 2002:3-29, 3-30, 3-118). Plumes were found to disperse primarily parallel to shore. Water column contaminant levels were found to be highest during the inception of the plume and decreased to background levels within 1 to 2 hours. The average current speed in the area of the existing ocean outfalls is 0.1 ft/s; therefore, assuming project sediments are similar to those found in the sediment capping study, sediments could travel up to approximately 950 feet from the construction work site in 2 hours before they settle out of the water column. Similarly, light transmission and suspended sediment levels in surface waters were found to be similar to baseline levels within 2 hours of exposure to a surface plume. Turbidity is expected to be localized and temporary during construction; therefore, impacts associated with the suspension of sediment would be less than significant.

Spills

There is a risk of accidental spillage of fuel, lubricants, concrete, or other potentially toxic materials used during construction activities. A spill prevention and control plan would be required for marine vessels

carrying petroleum and nontank vessels over 300 gross tons. The plan would detail and implement spill prevention and control measures. If an accidental spill were to occur, response and notification actions required by the plan would be implemented. Efforts to contain and neutralize the spill, such as deploying floating booms to contain and absorb the spill and using pumps to assist the cleanup, would be implemented. These measures would likely prevent the accidental spill from causing any persistent degradation of water quality. As a result, significant water quality impacts are not expected to occur as a result of accidental spills of pollutants during in-water construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the existing ocean outfalls following rehabilitation of the outfall pipeline would not result in contamination, pollution, or nuisance. Alternative 1 (Project) would result in the discharge of secondary treated effluent on the SP Shelf while allowing for the temporary use of the existing ocean outfalls during emergency situations or maintenance of the new ocean discharge system. The emergency use of the existing ocean outfalls is anticipated to occur only occasionally.

Potential impacts resulting from temporary use of the outfalls would generally be the same as those occurring under current conditions, or those which would occur during operation of the new ocean discharge system on the SP Shelf, as previously discussed. To summarize the analysis:

- The use of the new ocean discharge system would be consistent with an approved NPDES permit and WDRs for discharges from the JWPCP.
- Permit requirements include extensive monitoring and reporting, the data from which are considered during each permit renewal, thereby providing an adaptive management mechanism to track and improve water quality protection via the regulatory vehicle of NPDES permitting.
- The CIWQS has not reported an effluent violation from the JWPCP between 2004 and 2009 (SWRCB 2010). The JWPCP Annual Monitoring Report for 2009 (submitted to the LARWQCB on March 24, 2010) identified that the JWPCP achieved 100 percent compliance with all numeric effluent limits from 2002 to 2008, as well as in 2009 (Sanitation Districts 2010c).
- Monitoring data show that the existing ocean outfalls perform as designed, discharging below a trapping depth, with the effluent dispersing and mixing to immeasurably low concentrations before entering the ecosystem as a nutrient source. Therefore, there is no evident mechanism by which outfall operation could contribute to HABs.

In consideration of these points, coupled with the expectation that the existing ocean outfalls would be used only on a limited temporary basis, impacts resulting from operation of the existing ocean outfalls would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the SP Shelf for Alternative 1 (Project) would create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC. Impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

MM MAR-1a. During riser and diffuser construction, analyses of contaminant concentrations (i.e., metals, dichlorodiphenyltrichloroethane [DDT], polychlorinated biphenyls [PCBs], polycyclic aromatic hydrocarbons [PAHs]) in waters near the dredging operations will be required if the contaminant levels in the dredged sediments are known to be elevated and represent a potential risk to beneficial uses. Monitoring data will be used to demonstrate that water quality limits specified in applicable state and federal permits are not exceeded. Corrective or adaptive actions consistent with state and federal permits will be implemented if the monitoring data indicate that water quality conditions outside the mixing zone are above the permit-specified limits.

MM MAR-1b. Prepare and implement a contaminated sediment management plan that is consistent with practices outlined in the Los Angeles Regional Contaminated Sediment Task Force long-term management strategy if contaminant levels in the dredged sediments are known to be elevated and represent a potential risk. At a minimum, the plan will include site-specific best management practices at the immediate work site to reduce the potential area of exposure to contaminated sediments.

Residual Impacts

Mitigation for dredging operations on the SP Shelf would require sediment testing and a contaminated sediment management plan, which would reduce the risk of contaminant dispersal outside of the vicinity of the construction area, and would be consistent with requirements in the project CWA Section 401 certification or WDRs. Disposal of sediments in accordance with requirements provided by the Los Angeles Regional CSTF would reduce the likelihood of suspension and distribution of contaminated sediments and limit the potential for exposure of ocean waters to levels of contaminants that could result in violations of regulatory standards. Residual impacts would be less than significant.

NEPA Impact Determination

Construction of the riser and diffuser on the SP Shelf for Alternative 1 (Project) would create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM MAR-1a and MM MAR-1b.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact MAR-2. Would Alternative 1 (Project) substantially degrade marine sediment quality or character?

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

The SP Shelf primarily contains fine silty sediments. There are approximately 133,251 acres of soft-bottom sediments found at midshelf depths on the SP Shelf. Soft-bottom sediments provide habitat for a variety of benthic infauna and epifaunal species. As discussed in the project setting and in Impact MAR-1, some contaminated sediments have been found on the SP Shelf. Construction activities on the SP Shelf could disturb near-bottom sediments for the duration of the construction period. Sediment would be considered degraded if it becomes contaminated with chemicals, thereby affecting its quality, or if the character of the sediment is substantially altered (e.g., changing from fine silty sediment to large course sediment or vice versa) during construction activities.

Construction of the SP Shelf riser and diffuser and the turbidity generated during construction are described in Impact MAR-1. Construction activities would not add contaminants to the sediment. Additionally, based on current velocity and settling times on the SP Shelf, sediments disturbed by construction activities would most likely be redeposited in areas close to their point of origin and of similar sediment quality and characteristics. Therefore, the disturbance of bottom sediments as a result of construction would be expected to be short term and localized, and sediment quality or character would not be degraded. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the riser and diffuser on the SP Shelf is described in Impact MAR-1. The operation of the SP Shelf diffuser could change the quality of the sediment through deposition of particles in the discharged effluent. The impacts on the character and quality of sediment from the operation of the SP Shelf diffuser are evaluated using data from the existing ocean outfalls and other outfalls in Southern California.

In Southern California, municipal dischargers have been discharging in the same general locations for many years, and in some cases for decades. In 1993, the city of San Diego's Point Loma Wastewater Treatment Plant (PLWTP) began operation of an extension of its ocean outfall system in an area of the continental shelf that had not previously been subject to discharge of treated municipal wastewater effluent. In 2008, after 15 years of discharging mixed advanced primary and secondary treated effluent (a lower level of treatment than achieved at the JWPCP), monitoring conducted by the city of San Diego at the PLWTP found no relationship between sediment composition and distance from the outfall. Conditions in the area of the PLWTP outfall are similar to those near the JWPCP existing ocean outfalls. Concentrations of contaminants, including total nitrogen, total volatile solids, trace metals, pesticides (including DDT), PCBs, and PAHs, in sediments off Point Loma were found to be normal. No pattern of

contamination, outside of sulfides and BOD, or changes to sediment characteristics in the vicinity of the PLWTP outfall were observed in 2008. (City of San Diego 2009:1–4.)

It is difficult to assess recent deposition around the existing ocean outfalls on the PV Shelf due to the length of operation at the site, relatively recent changes in treatment levels at the JWPCP, and the legacy sediment contamination. However, indicators of organic enrichment in sediment, such as hydrogen sulfide, organic nitrogen, and total organic compounds can provide information regarding the sediment conditions around the existing ocean outfalls. Monitoring has shown that the levels of these indicators, although somewhat variable, have improved near the existing ocean outfalls on the PV Shelf over time (Appendix 13-A). The levels of legacy contaminants, including DDT, PCBs, chlordane, PAHs, and trace metals in sediments near the existing ocean outfalls, have declined over time. These contaminants are no longer discharged in the effluent in substantial levels as confirmed by JWPCP effluent sampling.

Improved conditions in the area of the existing ocean outfalls, and monitoring results near the outfall at Point Loma, suggest that other than some slight organic enrichment in the immediate area of the discharge, operation of the SP Shelf diffuser would not change the sediment characteristics in the area, nor substantially degrade the quality or character of the sediments. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Sediments on the PV Shelf include bioturbated fine silt and hard substrate, such as natural rocks and the existing ocean outfalls. These substrates provide habitat for a variety of species. As discussed in the project setting, the existing ocean outfalls are located within the EPA-designated DDT/PCB study area. Surface sediments, largely derived from current and recent discharge, are not degraded, while subsurface sediments due to deposits of legacy contaminants discharged decades ago remain in degraded condition. In 2006 and 2007, DDT levels at the shallowest station inshore of the outfalls at a 30-meter (98-foot) depth (somewhat deeper than the proposed rehabilitation) exceeded the ERM value during both years – cadmium exceeded the ERL value in 2006 and 2007, and arsenic exceeded the ERL in 2007 (Sanitation Districts 2008b).

Rehabilitation of the existing ocean outfalls is described in Impact MAR-1. The primary sediment-disturbing activity during construction would be placement of additional ballast rocks. Sediment would be considered degraded during construction activities if it becomes contaminated with chemicals, thereby reducing its quality, or if the character of the sediment is substantially altered (e.g., changing from fine silty sediment to large coarse sediment or vice versa) during construction activities. Rehabilitation of the existing outfalls would not substantially degrade marine sediment quality or character. Although local sediments may contain elevated concentrations of some contaminants, the disturbance of bottom sediments as a result of construction would be short term and localized, and would not result in a significant impact on sediment quality or character.

As discussed in Impact MAR-1, rock removal and ballast rock placement activities would result in temporary turbidity and relocation of sediments in the immediate vicinity of the outfall rehabilitation

activities. However, sediments are expected to settle rapidly following disturbance, depositing within the vicinity of the activity. Based on the average current speed in the vicinity of the existing ocean outfalls and the sediment characteristics described in the EPA capping study, sediments could travel up to approximately 950 feet before they settle out of the water column (EPA 2009b). Similarly, light transmission and suspended sediment levels in surface waters were found to be similar to baseline levels within 2 hours of exposure to a surface plume. Therefore, disturbed sediments are most likely to settle within areas of similar sediment quality and character. The disturbance of bottom sediments as a result of construction is expected to be short term and localized, and would result in a less than significant impact on sediment quality or character.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the rehabilitated existing ocean outfalls is discussed in Impact MAR-1. Subsurface sediments in the area of the existing ocean outfalls are known to be degraded as a result of the historic discharge of contaminants such as DDT and PCBs. As discussed in the environmental setting and SP Shelf sections, as well as in Appendix 13-A, sediment conditions in the vicinity of the current discharge are improving, and current levels of wastewater treatment do not appear to be contributing to sediment degradation in the area. Surface sediments, largely derived from current and recent discharge, are not degraded, while subsurface sediments due to deposits of legacy contaminants discharged decades ago remain in degraded condition.

As discussed in Impact MAR-1, the movement and location of particles and materials in the ocean are influenced by their size and the strength and direction of local currents. Discharged materials, like the existing sediment, deposit in areas where currents are not fast enough to maintain them in suspension. Thus, particulates discharged from the outfall, which are very fine in size, deposit a substantial distance from the outfall, in areas having comparable sediment grain size. Consequently, outfall operation does not have the potential to result in altered sediment grain size distribution. Therefore, intermediate and emergency operation of the existing ocean outfalls system following rehabilitation would not substantially degrade marine sediment quality or character.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not substantially degrade marine sediment quality or character. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 1 (Project) would not substantially degrade marine sediment quality or character. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact MAR-3. Would Alternative 1 (Project) result in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

Construction activities that would occur on the SP Shelf are discussed in Impact MAR-1. A combination of hydro-jetting, drop-and-release methods, and vibratory or impact pile driving would be used to install the jack-up barge legs and riser casing on the SP Shelf. For this analysis, it was conservatively assumed that impact pile driving was used during riser construction. Driving the jack-up barge legs would occur continuously for 10 hours per day over approximately 5 days, for as many as 24,000 pile strikes per day. For both the outer and inner casing, driving would occur continuously 10 hours per day over approximately 15 days each, for an estimated 2,400 strikes per day. The total duration of pile driving is expected to be 35 days, although those days are likely to be in blocks, with the discrete pile driving processes occurring over a period of several months. The pile driving construction activities would likely begin in 2019.

As described in Chapter 19, submarine material removed by the tunnel boring machines could be disposed at the LA-2 Ocean Dredged Material Disposal Site (ODMDS), approximately 5 miles south–southeast of the existing ocean outfalls, or the LA-3 ODMDS, which is about 21 to 26 miles downcoast from the SP Shelf riser and diffuser area. Maximum tunneling rates were assumed in this analysis, in which case there would be up to approximately 135 one-way barge trips between Fish Harbor and LA-3 each year during the construction of the offshore tunnel.

If dredged sediments are determined to be unsuitable for ocean disposal, the number of barge trips for transport of dredged materials would be equivalent, but the barge destinations (disposal site or port to unload for upland disposal, respectively) would differ and are assumed to be less than barge trips to LA-2 or LA-3. If sidecasting of dredged sediments is allowed, the number of barge trips would be fewer.

Apart from the barge trips for transport of excavated or dredged soils, a number of barge and vessel trips would also be required during riser and diffuser construction. The anticipated vessel trips for the SP Shelf riser and diffuser construction are summarized in Chapters 3 and 19. Approximately 1,600 vessel round trips would be needed for riser construction. Approximately 330 (for HDPE) to 640 (for steel/RCP)

vessel round trips would be needed for diffuser construction. This results in approximately 1,930 to 2,240 vessel round trips during the estimated 3-year construction period.

This analysis evaluates protected marine biological resources, specifically invertebrates, reptiles, birds, and mammals, and their habitat, as protected under the authority of the federal ESA, California ESA, MMPA, BGEPA, and/or MBTA, detailed in Section 13.3. These species are listed in Section 13.2.1.5 and discussed in detail in Appendix 13-A. They are collectively referred to herein as *protected species*. Impacts on these protected species that could occur during construction include the potential for injury or mortality associated with collision with vessels used during construction, injury or mortality associated with entanglement in cables and lines, injury or alteration of behavior associated with exposure to underwater sound, and impacts on foraging habitat associated with increase in surface and near-bottom turbidity generated by construction activities. As discussed under Impacts MAR-1, impacts resulting from spills would be less than significant; therefore, impacts on protected species would be less than significant and are not further discussed. Other potential effects on protected species associated with changes in migration patterns are discussed under MAR-5.

Vessel Collisions

Any marine mammals or sea turtles in the work area or along vessel transit routes to the construction area could collide with vessels during construction. Although uncommon, ship strikes involving marine mammals and sea turtles have been documented in the United States, including within the SCB. The majority of vessel collisions has involved large whales and is typically reported. Strikes on smaller animals are less likely to be noted and recorded. Blue, fin, gray, minke, and humpback whales are known or suspected to have been killed in California by ship strikes (Barlow 1994), with gray, blue, and fin whales the species most frequently reported struck by ships offshore of California (Cordero pers. comm. 2010; Jensen and Silber 2004). For example, three blue whales were killed in the Santa Barbara Channel during 2008 and 2009. Between 2000 and March 2010, two turtle strikes and 23 whale strikes were reported in the Southern California region (Cordero pers. comm. 2010).

Laist et al. (2001) examined worldwide records of whale strikes by non-motorized and motorized vessels between 1830 and 1998, and made the following observations about the reported whale strikes:

- There were 11 species involved, including three that are commonly found in west coast waters (gray, minke, and humpback whales).
- Most lethal and serious injuries to whales were caused by large vessels (260 feet or longer).
- Most severe or lethal injuries to whales occurred with vessels traveling at 14 knots (16 miles per hour [mph]) or higher.
- Whale strikes occurred infrequently with vessels traveling slower than 14 knots (16 mph) and rarely with vessels traveling at speeds of less than 10 knots (11.5 mph).

Although vessel speed is not the only factor in projecting the likelihood of whale collisions and the level of injury, data indicate that collisions are more likely to occur when large ships are traveling at speeds of 14 knots (16 mph) or higher. The NMFS has collected limited data detailing vessel operations at the time of known whale strikes (Jensen and Silber 2004). This data identified 292 records of confirmed or possible ship/whale strikes. Four percent involved vessels traveling at speeds of less than 13 knots (15 mph), and only 2 percent were traveling at speeds of less than 10 knots (11.5 mph). No tugboat/whale collisions were reported (Jensen and Silber 2004). Of the 292 records, 134 were confirmed vessel strikes in U.S. coastal waters, and vessel speed was known for 58 of the 134 confirmed cases (Jensen and Silber 2004). Of these, 39 strikes were known to have resulted in injury or mortality to the whale. In

addition to gray, minke, and humpback whales, the NOAA also reported one strike of a killer whale calf that was injured by a commercial ferry traveling at speeds of 15 to18 knots (17 to 21 mph).

In response to blue whale ship strikes off Southern California, the Channel Islands National Marine Sanctuary, the NMFS, and the U.S. Coast Guard advises ships to travel at 10 knots (11.5 mph) or less in shipping lanes to the ports of Los Angeles and Long Beach when blue whales are present (Silber et al. 2009). Based on these and other studies, NMFS "recommends that speed restrictions in the range of 10-13 knots be used, where appropriate, feasible, and effective, in areas where reduced speed is likely to reduce the risk of ship strikes and facilitate whale avoidance" (NOAA 2012). The type of vessel, as well as the speed, is also a factor in avoiding strikes. It is recognized that single hull smaller vessels, such as crew and supply boats typically used during ocean-going construction activities, are highly maneuverable and can stop over short distances when compared to other much larger container vessels or tugs (Silber et al. 2009). These features give these types of vessels advantages in avoiding strikes such as an increase response time and maneuverability.

For pinnipeds, the average mortality rate from boat collisions in California, Oregon, and Washington is approximately four California sea lions and two Pacific harbor seals per year (Carretta et al. 2009:5, 11). The common dolphin is one of the more abundant marine mammals in the SCB, and the bottlenose dolphin is also fairly common and widespread in nearshore areas. Mortality and injury of dolphins due to vessel collisions has not been reported by NMFS, but their agility and speed reduces the potential for injury/mortality due to ship strikes (Carretta et al. 2009). Similarly, seabirds are highly mobile and able to avoid collisions with vessels and other construction equipment.

Approximately 70,000 inbound/outbound vessel trips occurred in the course of traffic to and from the Port of Los Angeles and the Port of Long Beach in 2008 (Corps 2010). (See Chapter 19 for additional details regarding vessel traffic and trips.) The ports currently have a vessel speed reduction program (VSRP) that slows ship speeds to 12 knots from Point Fermin, approximately 40 nautical miles out, to the harbor. There is an approximate 90 percent participation rate with VSRP over all vessels entering the harbor complex. Mandatory vessel speed reduction is required in the precautionary zones entering and exiting the ports as shown on Figure 19-1 in Chapter 19. Approximately 135 one-way barge trips per year would carry excavated material to LA-2 and/or LA-3. Furthermore, approximately 1,930 to 2,240 vessel round trips would occur during construction of the riser and diffuser for approximately 3 years. The potential for vessel interactions with marine mammals would be increased by these additional trips. However, the significance of vessel traffic to marine mammals depends on the vessel speed, location of the vessels, the vessel type, as well as the species present in the areas traversed. Marine mammals in the SP Shelf area may come in proximity to large construction vessels, primarily tugboats and barges. Because construction at the riser and diffuser sites would increase the number of vessel trips in an area that is already susceptible to collisions with marine mammals, there is the potential for a significant impact. Implementation of MM MAR-3a through MM MAR-3c would reduce impacts to less than significant.

Entanglement

Marine mammals, sea turtles, or marine birds that dive underwater in the construction area could become entangled in ropes, lines, or other construction debris. Mortality has been reported in marine mammals, sea turtles, and seabirds as a result of entanglement (Carretta et al. 2005; NOAA 2008; Carretta et al. 2009), usually associated with fishing gear, particularly gillnets. Entanglement in anchor lines also has been documented, but no information is available on the prevalence of such events (Carretta et al. 2005; NMFS 2007). Because construction would require anchors, buoy lines, and rope, there is a potential for protected species to become entangled in lines associated with project construction.

Impacts would be significant. Implementation of MM MAR-3d to MM MAR-3g would reduce impacts associated with entanglement risk to less than significant.

Underwater Sound

Any marine mammals, sea turtles, or marine birds that dive underwater, within an area experiencing elevated underwater sound levels due to construction activities, could be injured or its behavior could be altered. For this analysis, it was conservatively assumed that impact pile driving would be used during riser construction. Underwater sound pressure waves from pile driving may affect protected species in the project area, particularly marine mammals, many of which use sound to communicate and, for cetaceans (whales and dolphins), to echolocate. Echolocation is a biological form of sonar used to locate objects such as prey or predators. Responses to underwater sound by marine mammals may include disturbance (Level B Harassment) and injury (Level A Harassment) during construction of the riser and diffuser.

Underwater sound is evaluated in terms of dB relative to a measurement standard, typically a pressure wave with an amplitude of 1 microPascal (µPa). During pile driving, the size and type of pilings used affect the sound volume produced. Because underwater sound levels would differ for each construction activity, levels were estimated separately for impact pile driving of the jack-up barge piles, the inner riser casing, and the outer riser casing. Underwater sound impacts are presented on Figure 13-9. The quantified analysis of the underwater sound impacts on protected marine mammals and birds during construction activities associated with pile driving for the jack-up barge, inner casing, and outer casing is provided in Appendix 13-G.

For cetaceans, sound pressure levels could exceed the injury threshold of 180 dB_{RMS} within approximately 60 feet of the location of pile driving during stabilization of the jack-up barge. This construction activity is expected to last 10 hours per day on each of the five working days. During riser casing installation, the injury threshold for cetaceans could be exceeded within distances of approximately 430 feet for the inner riser casing and 630 feet for the outer riser casing, with impact driving occurring for 10 hours on each of the 15 days for each casing.

Disturbance occurs when animals are startled by underwater sound. The disturbance threshold for cetaceans is 150 dB_{RMS} and, therefore, disturbance could occur within 800 feet of the jack-up barge, within 1.1 miles of the inner riser casing, or within 1.6 miles of the outer riser casing during pile driving.

For pinnipeds, the injury threshold of 190 dB_{RMS} would not be exceeded during stabilization of the jack-up barge, though the injury threshold would be exceeded within distances of approximately 180 feet during the pile driving of the inner riser casing and 260 feet for the outer riser casing. The disturbance threshold for pinnipeds is 160 dB_{RMS}; therefore, pinnipeds would potentially be startled and disturbed when they are within approximately 330 feet of the jack-up barge pile driving, within 2,500 feet of the inner riser casing, and within 3,600 feet of the outer riser casing.

The California brown pelican, grebes, murres, and cormorants are diving birds that could be present during riser and diffuser construction. These birds would be underwater only briefly while diving for food. However, individuals have the potential to be injured by impact driving sound while underwater. The injury threshold of 180 dB_{PEAK} for diving seabirds is estimated to be exceeded within approximately 360 feet of the jack-up barge stabilization, 1,230 feet for the inner riser casing, and 1,800 feet for the outer riser casing. Once a bird has dove for food within these injury radii, it would be very difficult for them to change direction or surface quickly enough to avoid the acoustic impact. Therefore, at these anticipated underwater sound levels, birds may be injured. Like cetaceans, diving seabirds could be

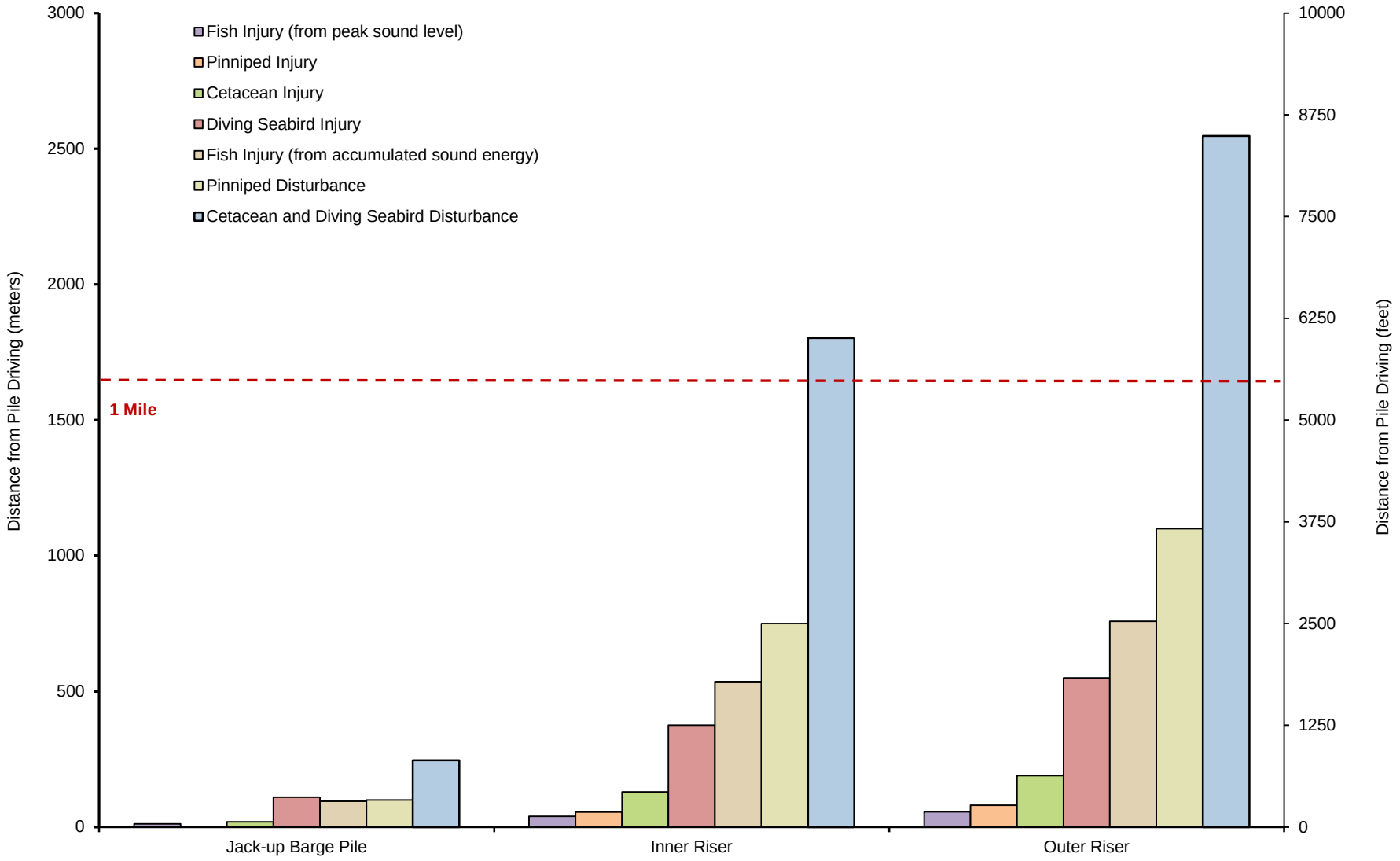


FIGURE 13-9

Noise Impacts Associated with Marine Construction Activities

Source: Sanitation Districts of Los Angeles County 2011 (Appendix 13-G)

startled and disturbed when they are within approximately 800 feet of the jack-up barge pile driving, within 1.1 miles of the inner riser casing, and within 1.6 miles of the outer riser casing.

In conclusion, underwater sound generated by construction activities associated with pile driving could result in significant impacts on protected marine mammals and birds. Implementation of MM MAR-3h and MM MAR-3i would reduce impacts to less than significant.

The SP Shelf is located in a major shipping corridor. Approximately 70,000 inbound/outbound vessel trips were recorded in 2008 for the combined trips of the Ports of Los Angeles and Long Beach (Corps 2010). Sound levels produced by ships are roughly correlated to the ship's size and speed (Richardson et al. 1995). A study conducted to evaluate underwater sound levels produced by large ships indicates that levels at a reference distance of 3 feet are in the range of 157 to 182 dB re 1µPa for vessels traveling at 10 knots (11.5 mph) (Kipple and Gabriele 2007). Underwater sound produced by vessels, by ship length, is displayed on Figure 13-10 (Kipple and Gabriele 2007).

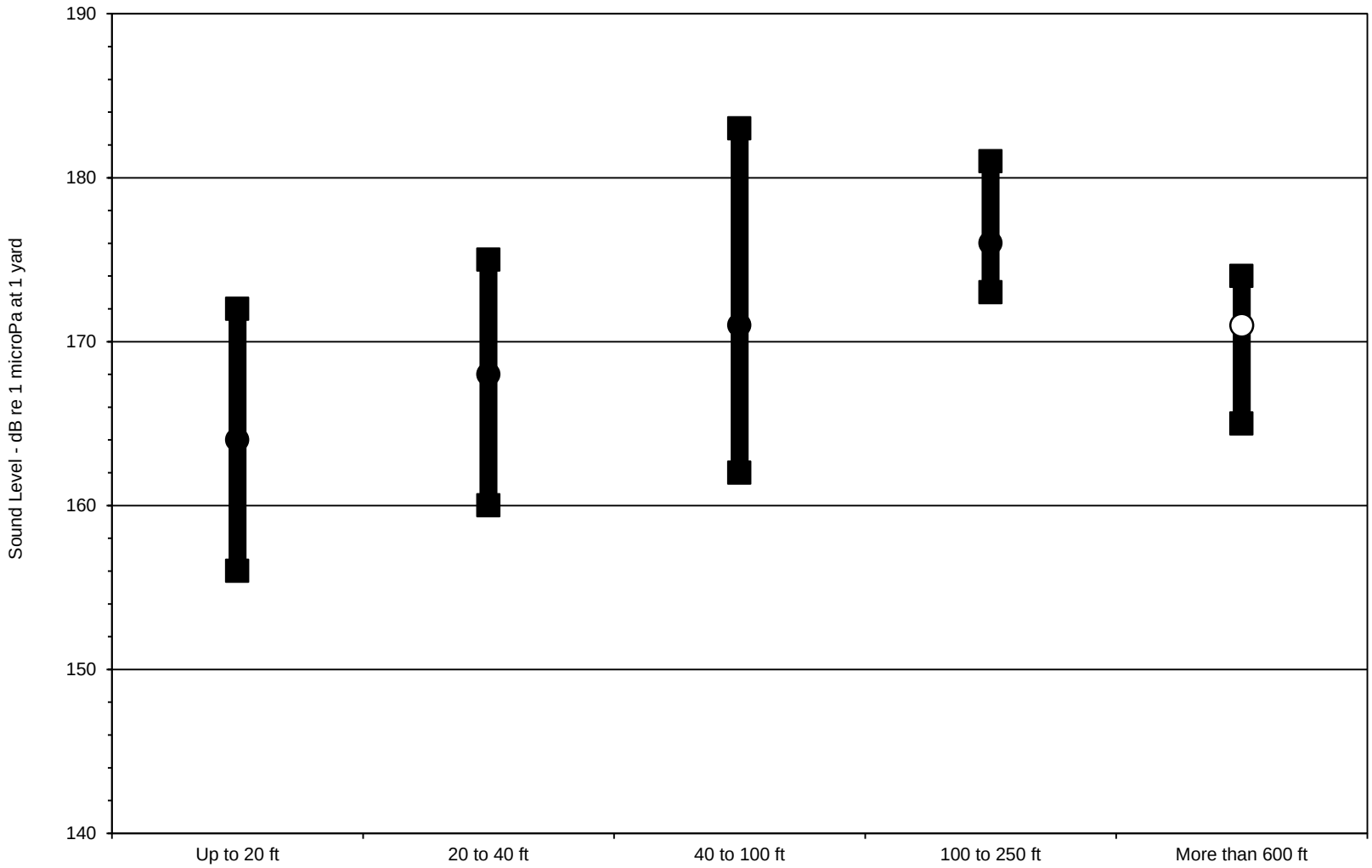
During the 3 years of project construction, there would be approximately 1,930 to 2,240 vessel round trips to the SP Shelf. Also, there would be approximately 135 one-way barge trips per year between the Port of Los Angeles and LA-2 or LA-3 to dispose of excavated material. The most intensive marine-related construction period would likely occur for a 2-year period during the construction of the riser and the construction of the offshore tunnel, assuming disposal of the excavated submarine tunnel material is at sea. During this time, approximately 900 vessel and barge round trips per year would occur. In the context of the approximately 70,000 existing inbound/outbound (one-way) vessel trips, the addition of approximately 900 round trips correspond to an increase of acoustical energy from vessels of approximately 1 percent. A 1 percent increase in acoustical energy corresponds to an increase of less than 1 dB. In humans, a 3 dB change is commonly accepted as a barely perceptible change with 1 dB being imperceptible. A single dB increase in the ambient underwater sound is similarly considered to be imperceptible to marine organisms. Accordingly, the introduction of project-related trips to the shipping corridor is not expected to change the underwater sound along the corridor. Therefore, underwater sound associated with the increased vessel traffic from construction activities would result in less than significant impacts on protected species.

Water Quality and Sediment Quality

The SP Shelf is not located within the DDT/PCB study area; therefore, construction would not affect sediment within this area.

Any marine mammals, sea turtles, or marine birds that forage underwater in the construction area could experience a change in foraging habitat associated with near-bottom or surface turbidity generated during construction activities. Seabirds could be affected by surface turbidity generated by construction activities, as described in Impact MAR-1. These birds forage by visually searching the ocean surface and diving for fish. Therefore, surface turbidity caused by construction activities could reduce their foraging effectiveness. However, seabirds using offshore waters forage over open water habitats throughout the entire SCB. Therefore, local surface turbidity would not substantially reduce foraging opportunities for seabirds.

Diving seabirds would not be impacted by subsurface turbidity because it would occur at depths near 200 feet. Cetaceans and pinnipeds are generally not benthic feeders, but rather are water column feeders. Although most local species are able to reach depths of 200 feet, they would not lose foraging opportunities as a result of near-bottom turbidity generated during construction. Gray whales, which are benthic feeders, feed nearshore typically at depths of less than 100 feet and feed only occasionally while migrating through the SCB. Gray whales may be observed in the SCB from December through May



Note: Based on the relationship between underwater sound level and speed indicated in Kipple and Gabrielle 2007, sound levels from vessels traveling at 12 knots are estimated to be 2 to 3 dB higher than sound levels for vessels traveling at 10 knots.

FIGURE 13-10

CLEARWATER Program

Range of 10-Knot Sound Levels by Vessel Category

Source: Kipple, Blair and Chris Gabriele, 2007
Underwater noise from skiffs to ships. Proceedings of the Fourth Glacier Bay Science Symposium. U.S. Geological Survey Alaska Science Center. Anchorage, Alaska.

during their northbound and southbound migrations. However, because gray whales feed nearshore, they would not be affected by the near-bottom turbidity at project depths. Finally, dredging and excavation activities would require a dredge permit from the Corps, and the permit would identify requirements to control discharge and the discharge plume. Accordingly, near-bottom turbidity generated by construction is not likely to affect protected species. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Once constructed, the new ocean discharge system would operate continuously, as described under Impact MAR-1. As discussed in Impact MAR-2, the discharge of effluent would not substantially change the composition or quality of the sediment on the SP Shelf. Change in migration patterns are discussed in Impact MAR-5.

Impacts on protected species associated with water quality could occur because of the operation of the diffuser. Nutrients and HABs have historically affected marine species. In 1991, large numbers of seabirds died as a result of a *Pseudo-nitzschia* bloom in Monterey Bay. In response, the state of California initiated a phytoplankton monitoring program (Appendix 13-B). In 1998, domoic acid was first linked to deaths in marine mammals (NOAA 2009). Mortality in protected species including sea otters, California brown pelicans, and a gray whale have been linked to domoic acid poisoning during periods of algal blooms, and high levels of domoic acid have been reported in blue and humpback whales (NOAA 2002, 2009). Since the late 1990s, the deaths of thousands of marine mammals, particularly pinnipeds, and sea birds have been attributed to domoic acid intoxication, and the frequency and severity of HABs appears to be increasing (Caron et al. 2010; NOAA 2009). At least six additional groups of toxins caused by phytoplankton are known to occur on the west coast, two of which have been linked to marine mammal mortality (Caron et al. 2010).

However, as discussed in Impact MAR-1, operation of the SP Shelf diffuser would not have the potential to affect the frequency or location of HABs. Furthermore, the diffuser's physical construction, location, and the existing conditions on the SP Shelf would not create pollution or contamination that would adversely affect protected species. Therefore, operational impacts on protected species would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Construction activities for rehabilitation of the existing ocean outfalls are described in Impact MAR-1. Impacts are associated with temporary increases in the potential for collision with vessels; entanglement

in cables and lines, rope, or other debris; exposure to turbidity and contaminated sediment; underwater sound; and removal of rocky habitat used by the black abalone.

Vessel Collisions

Impacts on protected species as a result of collisions with vessels working on the existing ocean outfalls would be similar to those described for construction on the SP Shelf. However, because there would be fewer vessel and barge trips during the 2-month rehabilitation work period, resulting in only a 1 percent increase in vessel trips over existing conditions, the likelihood of a collision would be less than that described for the SP Shelf. There would also be a somewhat different group of species potentially exposed to this hazard; with the exception of humpback and gray whales, large whales would not enter the shallow waters where rehabilitation work would be performed. Smaller cetaceans, pinnipeds, sea turtles, and a variety of marine birds could still be present. However, due to the limited vessel trips and shorter construction duration, impacts on these protected species would be less than significant.

Entanglement

Impacts on protected species from potential entanglement would be similar to those described for construction on the SP Shelf. However, there would be much less equipment, with fewer anchor lines, and a shorter construction duration, resulting in less chance of entanglement compared to the SP Shelf construction. Therefore, impacts would be less than significant.

Underwater Sound

No pile driving would be employed at this location; therefore, no underwater sound impacts on protected species would occur from pile driving. Impacts on protected species could occur as a result of underwater sound produced by vessels associated with construction activities. However, there would be fewer vessel trips associated with the existing ocean outfall rehabilitation activities as compared to the SP Shelf riser and diffuser construction activities. Furthermore, as described in Impact MAR-3, vessel trips would not generate underwater sound levels exceeding existing conditions. Therefore, protected species would not be harassed or harmed, and impacts from underwater sound would be less than significant.

Water Quality and Sediment Quality

As discussed in Impacts MAR-1 and MAR-2, rehabilitation of the existing ocean outfalls would result in subsurface and near-bottom turbidity. Surface turbidity may briefly and locally affect foraging by diving seabirds, chiefly (in this area) the California least tern and pelican, but abundant other foraging habitat is available nearby. Near-bottom turbidity generated by construction work may affect gray whale foraging, but gray whale prefer to feed in soft-bottom benthic sediments, and many other foraging areas of more preferred sediment type are available nearby on the PV Shelf. Elevated water column turbidity resulting from construction activities is expected to be short term and remain localized. Furthermore, the sediments on the existing ballast rocks around the rehabilitation work for the existing ocean outfalls (between 20- and 50-foot depths) are most likely sparse and of recent origin, and are not expected to be contaminated by DDT. Therefore, in consultation with the EPA, the rehabilitation work would not result in adverse impacts on the DDT area of concern (White pers. comm. 2010). Therefore, impacts would be less than significant.

Removal of Protected Species and Marine Habitat

Black abalone, which like all abalone live attached to hard substrate and rocks, is not a highly mobile species. Black abalone is known to occur to depths of about 30 feet off White Point. Rehabilitation of the existing ocean outfalls also would occur near these depths. Therefore, there is potential for loss of black abalone because of a change in habitat (e.g., rock removal and replacement) during construction.

The Sanitation Districts have not encountered black abalone on the existing ocean outfall pipes or ballasts during their routine maintenance and inspection activities (Sanitation Districts 2011a). Additionally, other surveys performed on the Palos Verdes Peninsula have not encountered black abalone on or around the existing ocean outfall pipes (Sanitation Districts 2011a). The CDFG has identified areas off Palos Verdes near the JWPCP outfalls as key locations for the recovery of black abalone, and NMFS recently designated the Palos Verdes Peninsula as critical habitat for the black abalone (CDFG 2005:6–27; NMFS 2011). Previous surveys and inspections have not detected the presence of black abalone and, therefore, this species is unlikely to occur on the existing ocean outfalls. However, construction could result in significant impacts because of the depth at which construction would occur and the fact that this area is designated by CDFG and NMFS as habitat for this species. Implementation of MM MAR-3j would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the existing ocean outfalls are described in Impact MAR-1. Impacts are associated with water quality and black abalone habitat.

Water Quality

As noted in Impact MAR-1, operation of the outfalls is consistent with the terms of a valid NPDES permit, which incorporates consideration of beneficial uses of the affected waters. For the waters receiving outfall discharges, those beneficial uses include rare and endangered species, marine habitat, and fish migration, as well as other uses unrelated to Impact MAR-3. As discussed previously, the Sanitation Districts have a solid record of NPDES permit compliance. There is, therefore, little risk that outfall operations adversely affect protected species. Under this alternative, the outfalls would cease to be used routinely and would only be used temporarily in emergencies or during maintenance of the new ocean discharge system. The quality of treatment would be as good as or better than it is now, and any discharges would continue to be subject to the requirements of a current, valid NPDES permit. Therefore, impacts would be reduced in comparison with current conditions, and would be less than significant.

Removal of Protected Species and Marine Habitat

There would be no net loss of black abalone habitat or species once ballast rocks are replaced under operating conditions. Furthermore, ballast rocks would be considered suitable habitat for black abalone. Therefore, operating impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the SP Shelf and on the existing ocean outfalls for Alternative 1 (Project) could result in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a

species of special concern. Impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Vessel Collisions

MM MAR-3a. Prepare and implement a collision protection plan to address sensitive and protected species. All construction personnel and boat operators will receive protected species training. The training will include review of the plan as well as identification of animals, species, and habitats potentially present in the project area.

MM MAR-3b. Restrict tugs, tugs with barges under tow, and large work vessels to speeds of 12 knots (14 miles per hour [mph]) or less at all times. Maneuverable single hull vessels such as crew or supply boats may proceed at speeds of 20 knots (23 mph) or less under most conditions, but will reduce speed to 12 knots or less when whales or sea turtles are reported in the project area.

MM MAR-3c. Immediately report all vessel collisions with marine mammals or sea turtles to the National Marine Fisheries Service.

Entanglement

MM MAR-3d. Limit the deployment of any material that has the potential to entangle marine mammals or sea turtles (e.g., anchor lines, cables, rope, other construction debris) to only as long as necessary.

MM MAR-3e. Remove as much slack as possible from any potentially entangling material to the point of not jeopardizing construction operations.

MM MAR-3f. Position temporary mooring buoys with heavy steel cables or chains to minimize potential entanglements.

MM MAR-3g. In the event that a marine mammal or sea turtle becomes entangled, immediately seek guidance from the National Marine Fisheries Service for safe disentanglement options.

Underwater Sound

MM MAR-3h. Implement a “soft start” method for all pile driving by operating the hammer at less than full capacity (i.e., approximately 40 to 60 percent energy levels) with no less than a 1-minute interval between each strike for a 5-minute period on initial driving for the day, or after a delay of 15 minutes between strikes.

MM MAR-3i. Prepare and implement a pile driving management plan. The plan will require that a National Marine Fisheries Service–approved observer be stationed on the work platform or work vessel to monitor the presence of sensitive marine species in the construction area on all days when pile driving is taking place. The observer will survey the project vicinity before pile driving is started and give approval before such work begins. The observer will continue to advise the construction crew throughout the day to modify or stop pile driving if a sensitive or protected species travels within injury distances

Removal of Protected Species (Black Abalone)

MM MAR-3j. Within 90 days prior to initiation of the rehabilitation work, survey the existing ocean outfall pipelines for black abalone at depths between the 15- and 55-foot isobaths in areas potentially affected by the work. The survey team will include divers/biologists experienced in locating abalone. If black abalone are determined to be present, consult with the National Marine Fisheries Service to develop

a black abalone transplantation plan that includes the identification of a suitable nearby transplant location, temporary holding and transport methods, and reporting requirements. Implementation of the plan will occur no more than 30 days preceding the in-water rehabilitation activities and will be conducted by qualified divers/biologists.

Residual Impacts

Implementation of MM MAR-3a through MM MAR-3c for the SP Shelf construction would reduce the risk of vessel collisions with protected species. While these measures are primarily focused on reducing known impacts on marine mammals, they would also reduce the likelihood of impacts on sea turtles and seabirds. Residual impacts would be less than significant.

Implementation of MM MAR-3d through MM MAR-3g for the SP Shelf construction would reduce the likelihood of entanglement of protected species. Residual impacts would be less than significant.

Implementation of MM MAR-3h and MM MAR-3i for the SP Shelf construction would substantially reduce the potential for injury to individuals of a protected species as a result of underwater sound associated with pile driving. These measures would also lessen the likelihood of disturbance impacts, but because of the distances over which substantial underwater sound could be transmitted, harassment disturbance (Level B Harassment) remains possible. Harassment impacts would be short term and would not result in injury of individuals or reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern. Residual impacts would be less than significant.

Implementation of MM MAR-3j for the existing ocean outfalls construction would reduce the potential for substantial loss of individual black abalone. Residual impacts would be less than significant.

NEPA Impact Determination

Construction of the riser and diffuser on the SP Shelf and on the existing ocean outfalls for Alternative 1 (Project) could result in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern. Construction impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM MAR-3a through MM MAR-3j.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact MAR-4. Would Alternative 1 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

This analysis discusses non-protected marine biological resources, such as local biological communities and marine habitat. Local biological communities are strongly influenced by substrate (rock, sand,

muddy sand, etc.) and small-scale morphology (bedforms, gullies) discussed in Impact MAR-2 and oceanographic and water quality conditions discussed in Impact MAR-1. In shallow areas, tides, waves, water temperature, and terrestrial inputs strongly influence the community composition of soft- and hard-bottom marine habitats. In deeper areas, physical oceanographic conditions are more uniform (e.g., uniform size and type of sediment); therefore, similar communities are found associated with similar sediment type over a generally greater depth range than what are found in shallow areas. However, depth and local oceanography remain important in deeper areas. Local biological communities and marine habitat present on the SP Shelf are discussed in Sections 13.2.1.5 and 13.2.2.1. Local biological communities generally include plankton, invertebrates, and fish. Marine habitat generally includes soft-bottom habitat, hard-bottom substrate, and designated EFH.

Construction of the SP Shelf riser and diffuser is described in Impact MAR-1. Potential construction impacts on local biological communities and the marine habitat that they rely on include: short-term increase in underwater sound levels during pile driving resulting in injury or disturbance to invertebrates and fishes; temporary increase in surface and subsurface turbidity affecting surface foraging habitat and near bottom habitat for invertebrates and fishes; reduction in DO at near bottom during the removal of the riser casing affecting invertebrates and fishes; damage to existing hard-bottom substrate resulting from anchor lines; conversion of soft-bottom substrate to hard-bottom substrate, resulting from the placement of diffuser legs on the seafloor, effecting EFH.

Underwater Sound

Underwater sound generated during SP Shelf construction is described in Impact MAR-3. Short-term increases in underwater sound impacts would result in the displacement, and possibly injury, of fishes in the water column and on or near the ocean floor. There is no designated regulatory injury threshold for fishes except for those protected under the federal ESA by NMFS. The injury threshold for fishes from peak sound levels (206 dB) would be exceeded at a distance of up to 40 feet during stabilization of the jack-up barge. This construction would take approximately 5 days. During riser installation, the peak injury threshold for fishes would be exceeded at distances of 130 to 185 feet. Injury to fishes from accumulated sound energy could occur within 315 feet of the pile driving for the jack-up barge, within 1,760 feet for impact driving of the inner casing, and within 2,490 feet for driving the outer casing (Figure 13-9). Most fishes would likely leave the immediate area of disturbance, although some may stay to feed on invertebrates released from the sediments (Anchor 2002:18–29). However, there would be no substantial disruption of SP Shelf fish communities because the affected area represents only a small proportion of the total available open water and near-bottom habitat on the SP Shelf. Implementation of MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) would reduce the likelihood of disturbance or injury caused by underwater sound associated with pile driving to less than significant. As described under Impact MAR-3, impacts on fishes from vessel noise, which are expected to be minor and short term, would be less than significant.

Water Quality and Sediment Quality

As discussed in Impacts MAR-1 and MAR-2, construction activities on the SP Shelf could alter water and sediment quality, which would affect existing local biological communities by reducing foraging area, possibly releasing nutrients into the water column, or smothering existing benthic organisms with sediment. Mortality could also occur as a result of construction activities modifying the sediment quality and the habitat of the benthic organisms.

Planktonic organisms would be temporarily affected by turbidity in the water column. Turbidity can impact phytoplankton populations by lowering the light available for phytoplankton photosynthesis and by clogging the filter feeding mechanisms of zooplankton. Effects on phytoplankton would be short term and limited to the immediate vicinity of the dredging due to the rapid dispersal and settling out of the

turbidity plume, as discussed in Impact MAR-1. Furthermore, phytoplanktonic organisms have a naturally occurring high mortality rate, and their reproductive rates are correspondingly high (Dawson and Pieper 1993), which allows for rapid recovery from small, localized impacts. Zooplankton would likely show localized declines but also would quickly recover because they share mobility and lifecycle characteristics with phytoplankton. Ichthyoplankton (lifecycle phases of fish) would likely not recover quickly because they are seasonally abundant and dependent on the phasing of lifecycles of individual fish species. However, impacts on phytoplankton, zooplankton, and ichthyoplankton are less than significant because construction would be short term and take place in a limited area. Thus, planktonic organisms on the SP Shelf would not be substantially disrupted.

Benthic and epifaunal (bottom dwelling) and demersal (bottom associated) marine species are adapted to life associated with specific bottom types and, on a finer scale, often show preferences among similar types of sediments. For example, species that burrow through or live in tubes within soft sediments (infauna) would not be found on exposed rocks, while those that form permanent attachments to hard surfaces would not be successful in a sand bed. Within these broader soft- and hard-bottom habitat types, there are further influences of sediment characteristics, so that different assemblages are found in fine sand and coarse sand bottoms, or on low-relief rock cobble versus a high-relief rocky reef. In addition, water depth, currents, and nutrient availability play important roles in bottom community characteristics. While benthic and epibenthic organisms located within the construction area would be subjected to temporary disturbances from turbidity and sediment resuspension and deposition generated by construction activities, the impacts associated with the construction activities would not be considered a substantial degradation or disruption of the communities due to their brevity and localized extent within a large area (tens of thousands of acres) of relatively uniform soft-bottom habitat.

Short-term lethal and sublethal effects that would occur during construction include direct mortality, arrested development, reduced growth, reduced ingestion, depressed filtration rate, and increased mucous secretion. Some organisms would be buried by settling sediments, while others would be able to move upward as the sediments accumulate (EPA 2009b:Ch 5) The SP Shelf has approximately 59,650 acres of soft-bottom habitat between depths of 100 and 400 feet (30 and 120 meters). As discussed in Appendix 13-A, the different depths within this area are common across the entire midshelf and support common communities of benthic and epibenthic organisms. The direct construction laydown area for the riser, diffuser, and roadbeds on the SP Shelf would be approximately 5 to 10 acres, which is less than 0.1 percent of the entire soft-bottom midshelf habitat of the SP Shelf. Therefore, although construction activities may cause mortality and sublethal effects on benthic and epibenthic communities at the work site during construction, the construction activities would not produce a substantial degradation or disruption to these common communities on the SP Shelf. Furthermore, effects of turbidity and sediment deposition on benthic habitat would be temporary, and the benthic and epibenthic communities that reside on the SP Shelf would recover.

Previous studies within the Port of Los Angeles and on the PV Shelf have examined the effects of sediment settling on benthic communities and recovery rates. Although there are some physical differences between the location of the Port of Los Angeles and the PV Shelf and the SP Shelf, the benthic communities are similar. Colonization of settled sediments by burrowing of buried residents or nearby organisms is expected to occur within hours or days following deposit, and later stage successional communities are expected within months to a year (MEC 1988:4-78 through 4-84). Similarly, the Palos Verdes Shelf Superfund Site Feasibility Study found that offshore habitat recolonization begins within days or weeks. Recovery to conditions similar to those found before disturbance were expected within months and almost certainly within 2 to 5 years based on the recolonization time of days to weeks

measured in the study (EPA 2009b:6-21, 6-22). As a result, benthic and epibenthic communities would not be substantially disrupted or disturbed, and impacts would be less than significant.

Fishes in the water column and on or near the ocean floor in the construction area would be temporarily disturbed by the underwater construction activities as a result of turbidity. Studies have identified that most fishes would leave the temporary area of disturbance, although some may stay to feed on invertebrates released from the sediments (Anchor 2002:18–29). There are no unique habitats within the general vicinity of the construction area that would draw fishes to that area and that are not found elsewhere on the SP Shelf. As previously discussed, the construction area footprint on the SP Shelf would be no larger than 10 acres, or less than 0.1 percent of similar habitat otherwise available to fishes on the SP Shelf at depths of 100 to 400 feet (30 to 120 meters). Fishes would have other locations to feed and move away from the disturbance; therefore, the impacts would be less than significant.

Water column turbidity generated by construction activities is expected to be short term and stay localized. Therefore, impacts on benthic species and the food chain would be less than significant.

Marine Habitat

Dredging/grading and sidecasting would result in the disturbance of some soft-bottom organisms, as previously discussed; however, areas with sidecast sediments would be recolonized after disturbance and later stage successional communities are expected within months to a year (MEC 1988:4-78 through 4-84; EPA 2009b). Anchor lines and/or mooring lines could drag on the seafloor, temporarily disturbing soft-bottom habitat. In soft sediments on the SP Shelf, anchors or anchor/mooring lines could create large divots or furrows, disrupting benthic and epibenthic communities. Such disruptions to soft-bottom habitat are common because the SP Shelf riser and diffuser area is located within proximity of the shipping lanes to the Ports of Los Angeles and Long Beach. Furthermore, as previously discussed, the soft-bottom habitat would recolonize relatively quickly (MEC 1988:4-78 through 4-84; EPA 2009b).

As discussed in Section 13.2.2.1, kelp can be found in the White Point area at water depths ranging from approximately 40 to 70 feet. The proposed re-ballasting work would occur at water depths ranging between approximately 20 and 50 feet. Thus, there would be some overlap between the general work area and the kelp habitat from approximately 40 feet to 50 feet. As a result, re-ballasting activities could impact kelp growing on the outfall pipes and the adjacent rock ballast. However, the impact would be minimized because the proposed method of placing the new ballast rock ensures that the work would be limited to the existing footprint of the outfalls (i.e., pipeline and adjacent rock ballast). The impact would also be temporary because kelp would be able to recolonize the rock ballast upon completion of construction. Furthermore, replacement of rock ballast would increase hard substrate and thus benefit benthic habitat. Overall, direct and indirect impacts on kelp forests would be minimal and temporary. Therefore, impacts would be less than significant.

Hard-bottom substrates, including reefs, are much less common on the SP Shelf, but are known to occur at midshelf depths. There are different types of organisms that only live on hard-bottom substrates, and many are physically attached to the substrate (e.g., sea fans and cup corals). Patches of hard-bottom substrate can be located many miles apart. When this type of habitat is disturbed, recovery depends on the duration of disturbance and the distance from other similar habitat. Therefore, the recolonization of disturbed hard-bottom habitat can result in different community dominants than were found initially in the area. Because anchors and lines could alter low- or high-relief reefs, and disrupt the associated communities, substantial disruption of this type of habitat would be considered a significant impact requiring mitigation. Disruption of naturally occurring hard-substrate habitat that would likely occur during construction due to the anchor spreads would be considered a significant impact. MM MAR-4c would reduce these impacts to less than significant.

Construction of the riser and diffuser would include placement of ballast rock. This would result in soft-bottom habitat on the SP Shelf being replaced with natural and anthropogenic hard substrate. However, given the small amount of soft-bottom habitat disrupted (approximately 10 acres or less), and the availability of approximately 59,650 acres of similar habitat throughout the midshelf of the SP Shelf, this decrease is not considered substantial. Furthermore, because hard-bottom habitat is intermittent on the SP Shelf, the placement of the riser, diffuser, and rock ballast would actually provide additional hard-bottom habitat for species. There would be a net increase in hard-substrate habitat available as a result of construction of the riser and diffuser structure. Wastewater outfalls in Southern California essentially serve as artificial reefs, attracting surrounding fauna and resulting in higher abundance than soft-bottom communities (Allen and Moore 1976). Placement of bottom structures would result in less habitat for soft-bottom species, such as Dover sole and Pacific sanddab, and more habitat for structure-oriented species, or those that prefer a sand/structure interface. Soft-bottom infauna and epifauna would be replaced by hard-substrate epifauna and attached invertebrates, resulting in a community similar to that found on naturally occurring hard structures at similar depths in the SCB. Therefore, impacts on marine habitat would be less than significant.

Essential Fish Habitat

A complete EFH assessment was prepared for Alternative 1 (Project) and is included in Appendix 13-C. The construction of the riser and diffuser would have no effect on the managed species that do not occur on the SP Shelf, and minimal effects on those that do. Riser placement, dredging/grading, and placement of ballast rock could affect the managed fish/invertebrate species that occur on the SP Shelf through habitat disturbance, turbidity, suspension of contaminants from sediments, and underwater sound. These effects would be temporary, occurring at intervals lasting approximately 3 years during the in-water construction period, with a general return to baseline conditions between construction activities and following construction, resulting in little disturbance to individuals or to EFH from construction.

There would be a decrease of soft-bottom habitat on the SP Shelf and an increase in hard structure. Placement of bottom structures would result in less habitat for soft-bottom species, such as recreationally important Dover sole and Pacific sanddab. However, given the small amount of soft-bottom habitat disrupted (approximately 10 acres or less) and the availability of similar habitat throughout the SP Shelf (approximately 59,650 acres between 100- and 400-foot [30- and 120-meter] depth), this decrease is not considered substantial. Furthermore, placement of the riser and diffuser structure would result in an increase in hard-bottom habitat, which would be a net increase in more desirable and less available habitat on the SP Shelf. Thus, more habitat for structure-oriented species, or those that prefer sand/structure interface, would be available. Accordingly, impacts on EFH from riser and diffuser construction would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the SP Shelf diffuser is described in Impact MAR-1. The treated effluent discharged from the new ocean discharge system would have the same physical properties as the discharge from the existing ocean outfalls because the dilution would be the same, if not better. Impacts on local biological communities and marine habitat that could be affected by the operation of the new ocean discharge system include: change in nutrients being discharged and resulting in an increased risk of HABs to

plankton and fish habitat; change in water quality and sediment quality resulting in a change to local biological communities and marine habitat, including EFH.

Nutrients and Harmful Algal Blooms

As discussed in Section 13.2.1.5, HABs can result in the production of toxins at levels that can affect local biological communities by bioaccumulating in species' tissue and causing illness and death in higher food chain animals (Appendix 13-B). The potential linkage between JWPCP effluent discharge and HABs is evaluated in Impact MAR-1 and was found unsupported by evidence. Operational volumes, effluent quality, and mass emissions discharged through the proposed SP Shelf discharge would be similar to existing conditions discharged on the PV Shelf at the existing ocean outfalls, and discharge depths and predicted trapping depths are comparable with the existing JWPCP effluent discharge site. Therefore, it is unlikely that relocating the JWPCP discharge would cause any change in frequency or distribution of HABs in the SCB (Appendix 13-B). Impacts on local biological communities and habitat would be less than significant.

Water Quality and Sediment Quality

Water and sediment quality can have effects on local biological community composition and density. As described in the project setting, there are common/similar biological communities on the SP and PV Shelves, and within the influence of the current discharge at the existing ocean outfalls' location. Local biological communities are largely distributed by depth ranges. Fish and benthic invertebrate communities within proximity of the current discharge are representative of unimpacted, or reference, communities, despite legacy contaminants (DDT and PCB) that still persist on the PV Shelf (Sanitation Districts 2008b). These communities were originally altered and reduced primarily due to the discharge of organically enriched suspended solids and to a lesser extent other contaminants such as DDT/PCBs in the 1970s. However, a normal epibenthic community was reestablished on the PV Shelf by 1980, and today the infaunal community is generally representative of other locations on the PV Shelf. Currently, the health of fishes and invertebrates within proximity of the existing discharge is considered excellent, with no diseases or anomalies evident in invertebrates and no disease in fishes (Sanitation Districts 2008b:6.20).

In Southern California, municipal dischargers have been discharging in the same general locations for many years, in some cases for decades, such as the Sanitation Districts' existing ocean outfalls on the PV Shelf. As a result, despite improvements in treatment and discharge quality, the legacy of historic contamination makes it difficult to determine if impacts on local biological communities are indicative of current or historic inputs. In 1993, however, the city of San Diego PLWTP began operation of an extension of their ocean outfall system in an area of the continental shelf that had not previously been subject to discharge of treated municipal waste (City of San Diego 2009:1–4). In preparation of the new outfall, the city conducted a 2.5-year baseline study to characterize the background environmental conditions prior to the initiation of effluent discharge. The PLWTP effluent is a mixture of advanced primary and secondary treated wastewater, which is of lower quality than current secondary treatment levels at the JWPCP. In 2008, after 15 years of discharge, studies found that outside of some changes in the infauna community near the discharge in the ZID, the infaunal assemblages in the region have remained similar to those found prior to effluent discharge and to natural communities characteristic of similar habitats elsewhere on the continental shelf of the SCB. Similarly, trawl surveys found no indications of effects of the discharge on either the demersal fish or epifaunal invertebrate communities in the region, or in levels of contaminants found in local fish tissues. Therefore, 15 years of data have shown a new discharge location, with no legacy effects and a treatment level lower than that of the JWPCP, has no effects on local biological communities.

The local biological communities on the PV and SP Shelves are similar in terms of species diversity and type, regardless of the fact that the existing ocean outfalls discharge at the PV Shelf. Furthermore, no effects on the local biological communities were found in relation to treated effluent discharges in other areas studied in Southern California with similar characteristics to the SP Shelf. Therefore, impacts related to a discharge of treated effluent on the SP Shelf would be less than significant to local communities.

Essential Fish Habitat

A complete EFH assessment for Alternative 1 (Project) is included in Appendix 13-C. As discussed in Impacts MAR-1 and MAR-3, operational volumes and effluent quality discharged on the SP Shelf would be similar to existing conditions, and discharge depths and predicted trapping depths are comparable to the existing JWPCP discharge site. Therefore, the operation of the riser and diffuser would have no effect on EFH on the SP Shelf.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Rehabilitation of the existing ocean outfalls is described in Impact MAR-1. Potential construction impacts on local biological communities and the marine habitat that they rely on are the same as those described for construction on the SP Shelf.

Underwater Sound

Rehabilitation of the existing ocean outfalls would not involve pile driving. Therefore, there would be no underwater sound impacts on local biological communities or marine habitat due to pile driving. A description of the vessels used during rehabilitation of the existing ocean outfalls is provided in Chapter 3. Vessel sound does not have the potential to exceed thresholds for harm to or disturbance of fishes, and, moreover, as discussed in Impact MAR-3, would not materially affect ambient high underwater sound levels attributable to heavy port traffic. Therefore, underwater sound impacts associated with increased vessel traffic from construction activities would be less than significant.

Water Quality and Sediment Quality

As discussed in Impacts MAR-1 and MAR-2, rehabilitation of the existing ocean outfalls would result in subsurface and near-bottom turbidity. Elevated water column turbidity resulting from construction activities is expected to be short term and remain localized. Furthermore, the sediments on the existing ballast rocks around the rehabilitation work for the existing ocean outfalls (between 20- and 50-foot depths) are most likely sparse and of recent origin, and are not expected to be contaminated by DDT. Therefore, impacts would be less than significant.

Marine Habitat

Impacts on fishes and invertebrates, including attached algae that inhabit the ballast rock surrounding the existing ocean outfalls, would occur as additional ballast rock is added. Organisms could be smothered or crushed. As discussed previously for the SP Shelf construction, recovery depends on the duration of disturbance and the distance from other similar habitat, as well as the season of disturbance

(Dayton et al. 1984; Dayton et al. 1992; Ebling et al. 1985). In the area of the new ballast rock, the work area would be immediately adjacent to the existing ballast rock community; therefore, the distance between the disturbed community and the recruitment community to recolonize the ballast rock after disturbance would be short. The existing ballast rock community would provide a source of recruits of the type found on the rocks before removal. Therefore, the new ballast rock is expected to be recolonized rapidly by a community similar to that found on the rocks initially. Impacts would be less than significant.

Essential Fish Habitat

A complete EFH assessment is included in Appendix 13-C. The entire PV Shelf is within the designated area of EFH. The rehabilitation of the existing ocean outfalls would have no effect on the managed species that do not occur on the PV Shelf, and minimal effects on those that do. Rehabilitation could affect the managed fish/invertebrate species that occur on the PV Shelf through habitat disturbance, turbidity, suspension of contaminants from sediments associated with underwater construction, and underwater sound. These effects would be temporary, occurring at intervals lasting up to approximately 9 months during the in-water construction period, with a general return to baseline conditions between construction activities and following construction. It is expected that few, if any, individual fish would be lost because most individuals would avoid the work area, resulting in little disturbance to individuals or to EFH from construction. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

As discussed in Impact MAR-1, rehabilitation of the existing ocean outfalls would allow for the temporary use of the existing ocean outfalls during emergency situations or maintenance of the new ocean discharge system on the SP Shelf. Operations would not occur if the new ocean discharge system on the SP Shelf were operating. Therefore, the volume of discharge would be reduced compared to existing conditions.

Water Quality and Sediment Quality

As noted in Impacts MAR-1 and MAR-3, water and sediment quality are influenced by discharges and in turn affect local biological community composition and density. As described in the project setting, there are common/similar biological communities on the SP and PV Shelves, and within the influence of the current discharge at the existing ocean outfalls' location. Fish and benthic invertebrate communities within proximity of the current discharge are representative of unimpacted, or reference, communities, despite legacy contaminants (DDT and PCB) that still persist on the PV Shelf (Sanitation Districts 2008b). These communities were originally altered and reduced primarily due to the discharge of organically enriched suspended solids and to a lesser extent other contaminants such as DDT/PCBs in the 1970s. However, a normal epibenthic community was reestablished on the PV Shelf by 1980, and today the infaunal community is generally representative of other locations on the PV Shelf. Currently, the health of fishes and invertebrates within proximity of the existing discharge is considered excellent, with no diseases or anomalies evident in invertebrates and no disease in fish (Sanitation Districts 2008b:6.20). Accordingly, conditions at the existing discharge support a conclusion of no significant adverse impacts on marine communities. Under Alternative 1 (Project), operation of the existing ocean outfalls would be further reduced. Therefore, impacts would be less than significant.

Essential Fish Habitat

Discharge through the rehabilitated existing ocean outfalls would be temporary and intermittent during operating conditions. Ongoing studies of the current ocean outfalls indicate fish communities in the vicinity of the ocean outfalls are representative of reference conditions (see Appendix 13-C and Impacts MAR-1 and MAR-2). Therefore, the temporary resumption of discharge from the existing ocean outfalls would not result in a degradation of fish habitat in the area. Overall, impacts on EFH as a result of the operation of the existing ocean outfalls would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the SP Shelf for Alternative 1 (Project) could result in the substantial degradation or disruption of marine habitat or local biological communities. Impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Underwater Sound

Implement MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i).

Marine Habitat

MM MAR-4c. Prepare and implement an anchoring plan prior to in-water construction activities in accordance with the U.S. Army Corps of Engineers' permitting requirements. The plan will identify deployment methods for anchors, lines, cables, and moorings to minimize damage to hard-bottom substrate.

Residual Impacts

Residual impacts would be less than significant. Compliance with MM MAR-4c would identify the location of hard substrate and would avoid the hard-substrate habitat, thereby reducing impacts to less than significant. Other impacts also would be less than significant. See residual impacts discussion under Impact MAR-3.

NEPA Impact Determination

Construction of the riser and diffuser on the SP Shelf for Alternative 1 (Project) could result in the substantial degradation or disruption of marine habitat or local biological communities. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) and MM MAR-4c.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact MAR-5. Would Alternative 1 (Project) interfere with the movement/migration corridors of marine biota?

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

As discussed in Section 13.2.1.5 and Appendix 13-A, several marine species migrate through the SCB, including birds, marine mammals, sea turtles, and fishes. Some of the construction activities could affect the migration of these species.

Birds

Seasonality of seabird and shorebird species in the SCB is discussed in Appendix 13-A. Migrating birds that visit or pass through the project area would not be affected because construction activities on the surface of the ocean would not impede or disrupt their movement.

Whales

Each year, the majority of the gray whale population migrates from feeding grounds in Arctic seas to mating and calving grounds in the coastal lagoons of Baja California and the Gulf of California and back again. From late fall through winter, gray whales travel south from the Arctic to Mexico, usually leaving the Bering Sea between late October and early January (Bonnell and Dailey 1993). The southbound gray whales begin arriving in the SCB in mid-December, and some small portion of the gray whale population is known to calve in SCB waters (Dohl et al. 1981). In Southern California, gray whales are seen up to 125 miles from shore, although about half travel within 7 miles of the shoreline (Bonnell and Dailey 1993; MBC 1989). Southbound whales follow one of three general routes: a nearshore route that closely follows the mainland except around Santa Barbara and Santa Monica Bay, an inshore route that passes through the Channel Islands, and an offshore route that follows an undersea ridge offshore of the Channel Islands. Individuals on the nearshore or inshore routes may use part of either route during their southbound migration. Calving takes place from January through March, after which the northbound migration begins. The northbound migration routes through the SCB do not differ substantially from the southbound routes, again with about half the population found nearshore. Gray whales feed only occasionally during their migration, though observations of nearshore feeding in the SCB during migration have been reported. Humpback whales are also present in the SCB from March through June and from September through December. In these months, however, sightings are uncommon and widespread (Bonnell and Dailey 1993).

Blue, fin, and sei whales also migrate through the SCB annually between June and September along a path that follows the continental slope well offshore of the project area (Bonnell and Daily 1993). Blue whales have become increasingly common in nearshore waters of the SCB (Barlow 1994). Eastern north Pacific blue whales may be found from the Gulf of Alaska to the eastern tropical Pacific, and possibly as far west as Wake Island (Carretta et al 2009:175). Most of the population is thought to migrate south in winter to highly productive feeding grounds in the Gulf of California and off of Costa Rica. The west coast of North America, including the SCB, is considered an important feeding area for blue whales in summer and fall. Not much is known about the distribution of fin whales, and while aggregations occur year-round off southern and central California, their abundance appears to be lower in winter and spring, suggesting that the population migrates seasonally outside of coastal waters (Carretta et al. 2009:181).

Minke whales are present in the SCB year-round, though their abundance varies. Most sightings have been in the vicinity of the Channel Islands or seaward; however, minke whales have been known to occur in the San Pedro Channel between Santa Catalina Island and Palos Verdes Point in late spring and early summer (Bonnell and Dailey 1993).

Construction on the SP Shelf is described under Impact MAR-1. Impact MAR-3 identifies impacts on whales associated with vessel collisions, entanglement, and underwater sound. The implementation of MM MAR-5a through MM MAR-5g (same as MM MAR-3a through MM MAR-3g) would reduce impacts on protected marine mammals, such as the whales described. These measures would reduce vessel collision and entanglement impacts to less than significant for any whale that migrates through the SP Shelf riser and diffuser area.

Pile driving associated with the jack-up barge and the installation of the inner and outer casings would produce underwater sound levels potentially disturbing or injuring marine mammals. Construction of the SP Shelf riser would last approximately 2 years, and likely start in 2019 and end in 2021. During this time, pile driving would likely occur in the fall of 2019 over approximately 5 days for the jack-up barge and over approximately 15 days for each casing (for a duration of approximately 30 days). Therefore, pile driving could occur during the gray whale southward migration along nearshore routes. Because elevated underwater sound levels would occur within the nearshore migration corridor, construction activities would result in a significant impact on gray whale migration. Implementation of MM MAR-5h and MM MAR-5i (same as MM MAR-3h and MM MAR-3i) would reduce impacts on migrating gray whales to less than significant.

Sea Turtles

The green turtle, loggerhead turtle, leatherback turtle, and olive ridley sea turtle all have broad, international geographic ranges and are highly migratory, as discussed in Section 13.2.1.5 and Appendix 13-A. All of these species are encountered on an occasional basis in the SCB, primarily during warmer summer months. However, they generally do not mass migrate as whales do, and their migration routes are typically located far offshore. Based on this evidence, migration of turtles would not be impeded and their movement would not be disrupted during construction based on planned construction timing for underwater sound impacts (to occur in fall 2019).

Fishes

Underwater sound generated specifically by pile driving construction activities could impact fishes, as discussed in Impact MAR-4. As discussed in Section 13.2.1.5, the migration of various fish species to inshore areas of the SCB occurs seasonally, in the spring and summer. Pile driving would occur on the SP Shelf in the fall of 2019. Fishes would not be disrupted during their movement because the underwater sound associated with construction on the SP Shelf would not occur during migration times.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the SP Shelf diffuser is described in Impact MAR-1 and is not expected to impede or disrupt the movement or migration of any whale, turtle, or fish species. There are a number of permanent

structures in the ocean and on the seafloor, including other ocean outfalls on the seafloor; oil and natural gas rigs that extend from the seafloor to the ocean surface; and fiber optic lines, which extend along the seafloor. None of these permanent structures impede the migration or movement of whales or fishes because these species are able to negotiate around the structures. The SP Shelf diffuser would be located on the seafloor of the shelf in waters approximately 200 feet deep and would be covered with ballast rock. It would be no more intrusive than the existing ocean outfalls or other permanent ocean structures. Furthermore, as demonstrated in Impacts MAR-1 and MAR-3, the treated effluent plume would maintain water quality on the shelf and thus has no potential to impact migrating species. Therefore, operation of the new ocean discharge system would not interfere with movement or migration corridors of marine biota, and impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

The analysis for the construction on the SP Shelf regarding birds, sea turtles, and fishes would be the same for the rehabilitation of the existing ocean outfalls. As described previously, gray whales migrate through the SCB twice per year, traveling south from late fall though winter and north again in spring. Gray whales, including cow/calf pairs, may pass the existing ocean outfalls seasonally. Additionally, bottlenose dolphins have a large seasonal variation in abundance, which suggests some portion of the population migrates through the SCB. In the SCB, there are two distinct populations of this species: the coastal population and the offshore population (Carretta et al. 2009). The coastal population generally inhabits waters within approximately 3,200 feet of the mainland shore, while the offshore population inhabits both nearshore and offshore waters extending out beyond the Channel Islands (Bonnell and Dailey 1993). Therefore, gray whale and bottlenose dolphin migration could be affected by nearshore work on the existing ocean outfalls.

Impacts on these protected species would be less than significant regarding vessel collisions and entanglement as discussed under MAR-3. This is due to limited vessel trips and short construction duration for the rehabilitation of the existing ocean outfalls. Rehabilitation of the existing ocean outfalls would not involve pile driving; therefore, there would be no impact on protected migrating species due to pile driving. The introduction of project-related vessel trips nearshore and shipping corridors is not expected to change the underwater sound environment in any meaningful way as discussed in MAR-3; therefore underwater sound impacts on protected migrating species would be less than significant. Impacts on protected migrating species would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the rehabilitated existing ocean outfalls is described in Impact MAR-1. Current operation of the existing ocean outfalls does not physically impede the migration of species. The rehabilitated existing ocean outfalls would not physically be altered and would, by operating infrequently, produce a lower volume of effluent. As discussed in Impacts MAR-1 and MAR-3, the current operation of the existing ocean outfalls meets all water quality standards, and the rehabilitation would not alter the nature of the treated effluent discharged. Therefore, migrating species would not be impacted by water quality of the treated effluent released from the rehabilitated existing ocean outfalls. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the SP Shelf for Alternative 1 (Project) could interfere with the movement/migration corridors of marine biota. Impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Vessel Collisions

Implement MM MAR-5a through MM MAR-5c (same as MM MAR-3a through MM MAR-3c).

Entanglement

Implement MM MAR-5d through MM MAR-5g (same as MM MAR-3d through MM MAR-3g).

Underwater Sound

Implement MM MAR-5h and MM MAR-5i (same as MM MAR-3h and MM MAR-3i).

Residual Impacts

Residual impacts would be less than significant. See the residual impacts discussion under Impact MAR-3.

NEPA Impact Determination

Construction of the riser and diffuser on the SP Shelf for Alternative 1 (Project) could interfere with the movement/migration corridors of marine biota before mitigation. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM MAR-5a through MM MAR-5i (same as MM MAR-3a through MM MAR-3i).

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact MAR-6. Would Alternative 1 (Project) adversely affect public health?

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

Impact MAR-6 addresses the operation of the new ocean discharge system on the SP Shelf; therefore, construction is not analyzed for this threshold.

Operation

CEQA Analysis

The Sanitation Districts have discharged treated effluent off the Palos Verde Peninsula for over 73 years. The annual volume of effluent discharged to the ocean from the JWPCP has remained relatively steady (averaging less than 350 MGD) since 1971 (Sanitation Districts 2008b). The JWPCP has been extensively modified over the years to improve effluent quality. As a result of full secondary effluent treatment and improved solids handling, the amount of suspended solids discharged to the ocean has been reduced by 96 percent from the quantity discharged in 1971. Approximately 97 percent of the solids entering the JWPCP each day are removed before the effluent is discharged to the ocean. Also, aggressive industrial pretreatment measures and more effective treatment and operational strategies have resulted in a dramatic decline in trace contaminants in the effluent since the 1970s.

The Sanitation Districts' JWPCP Biennial Receiving Water Monitoring Report for 2008-2009 (Sanitation Districts 2010a) shows that throughout 2009, the effluent discharge from the JWPCP has complied with California Ocean Plan standards. Over the past three decades, the improvements in effluent quality and, hence, benthic habitat quality, have resulted in positive changes in the demersal fish and invertebrate assemblages off Palos Verdes.

Compliance monitoring data for the JWPCP wastewater discharges between 1998 and 2009 indicate that the Sanitation Districts have consistently complied with the effluent limitations of the RWQCB WDR Order and NPDES permit, with the exception of a single observation of waste of sewage origin in 1999, and two exceedances of effluent daily maximum settleable solids limitations (one in 2000 and one in 2001) (Sanitation Districts 2010c:1-1; Appendix 13-E).

Meeting the receiving water quality objectives of the California Ocean Plan and NPDES permit is a fundamental component of the overall ocean discharge system diffuser selection and evaluation process for the SP Shelf. This water quality control plan for the ocean waters of California regulates discharge of waste to the ocean by setting limits or levels for water quality parameters to provide reasonable protection of beneficial uses. The discharger of waste to ocean waters of California must not cause a violation of these objectives. These standards include bacterial characteristics to protect water contact recreation and shellfish that may be harvested for human consumption from bacterial contamination; therefore, they provide protection to human health. Furthermore, the NPDES permit also provides limitations on the discharge to ensure that beneficial uses of the receiving waters are protected, including beneficial uses which involve a level of protection to human health (e.g., direct contact with water).

The JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) stated that the following objectives should be considered in the outfall design:

- Satisfy or exceed existing permit requirements
- Assure no significant effects on other regional discharges
- Improve the receiving water quality – no deterioration of receiving water quality
- Maintain a submerged plume – no increase in surfacing of the effluent

As discussed in Impact MAR-1, the proposed SP Shelf diffuser is being designed to meet the receiving water standards of the California Ocean Plan as well as the requirements of the JWPCP's existing RWQCB WDR order and NPDES permit. With compliance with these standards and requirements, there would be no adverse effect on the public using beaches or the ocean for recreational or commercial fishing purposes associated with the release of effluent at the SP Shelf. The Sanitation Districts would continue to monitor the performance of the ocean discharge system for conformance with the California Ocean Plan and NPDES requirements. Furthermore, the discharge of treated effluent would occur at a depth of 200 feet approximately seven miles off the coast of Southern California. People would have no direct or indirect contact with the effluent plume at this depth and distance and thus adverse effects on public health would not occur. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

Impact MAR-6 addresses the operation of the rehabilitated existing ocean outfalls; therefore, construction is not analyzed for this threshold.

Operation

CEQA Analysis

As previously discussed, the Sanitation Districts have been discharging treated effluent into the Pacific Ocean for over 73 years, and the annual volume of discharge has remained relatively constant (Sanitation Districts 2006). The rehabilitated existing ocean outfalls would only be used temporarily in emergencies or during maintenance of the new ocean discharge system; therefore, the overall volume discharged from the existing ocean outfalls would decrease. Potential impacts from emergency use or temporary maintenance of the existing ocean outfalls would be substantially the same as those occurring under current conditions, or that would occur during operation of the SP Shelf outfall, as detailed in Impact MAR-1. Specifically, the use of the outfalls would be consistent with an approved NPDES permit and WDRs for discharges from the JWPCP. Those requirements are not likely to be less protective of water quality than the current NPDES permit for current, daily use of the outfalls. That permit was adopted in September 2011, with further renewal required every 5 years. The Sanitation Districts would continue to monitor the performance of the existing ocean outfalls for conformance with the California Ocean Plan and NPDES requirements. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Operation of Alternative 1 (Project) would not adversely affect public health. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Operation of Alternative 1 (Project) would not adversely affect public health. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact MAR-7. Would Alternative 1 (Project) impair beneficial uses designated in the California Ocean Plan?

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

Construction of the SP Shelf riser and diffuser is described in Impact MAR-1. The Sanitation Districts would acquire and comply with a CWA Section 401 Water Quality Certification from the RWQCB for construction dredging and filling activities. The Sanitation Districts would also acquire and comply with a Department of Army permit from the Corps for work in waters of the U.S. for the discharge of fill material and transport of dredged material during construction. A spill prevention and control plan would be required for marine vessels carrying petroleum and nontank vessels over 300 gross tons. The plan would detail and implement spill prevention and control measures. A NPDES permit would also be obtained, as required, for the removal of the riser casing and the release of the entrained water.

The California Ocean Plan, discussed in Section 13.3.2.4, specifies: "The beneficial uses of the ocean waters of the State that shall be protected include industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish migration; fish spawning and shellfish harvesting" (SWRCB 2005:3).

The construction of the SP Shelf riser and diffuser would not result in a decrease in water quality that would significantly impact the designated beneficial use of the receiving water. Construction on the SP Shelf would last approximately 3 years from 2019 to 2022. As discussed in Impact MAR-1, turbidity would be generated during certain activities, such as pile driving and preparing the diffuser bed, and DO would be reduced for a period of time when the outer casing is removed.

Construction would not have an impact on the offshore beneficial uses that are summarized in Table 13-14 and discussed in the analysis that follows.

Table 13-14. Summary of No Construction Impacts on Beneficial Uses – SP Shelf

Designated Offshore Beneficial Uses	Construction Impact
IND – Industrial Service Supply	No impact because of distance and no nearby users.
NAV – Navigation	No impact because of location.
REC 1 – Water Contact Recreation	No impact because of distance.
REC 2 – Non-Contact Water Recreation (including aesthetics)	No impact because of distance and location.
COMM – Commercial and Sport Fishing	No impact on sports fishing because of distance, depth, and habitat. Temporary loss of a small area available on the SP Shelf for permitted shrimp and other species trawling activities would occur during construction. Increase in preferred recreational hard-bottom fishing habitat at the discharge site.
SHELL – Shellfish Harvesting	No impact because of distance, depth, and habitat. Temporary loss of a small area available on the SP Shelf for permitted shrimp activities would occur during construction.
SPWN – Spawning, Reproduction, and/or Early Development	No impact because of habitat.

Industrial water users draw industrial water supplies from the Pacific Ocean immediately along the coast. The construction activity would occur approximately 7 miles offshore. Any turbidity and decrease in DO caused by construction activities would, as detailed in Impact MAR-1, be local and would not affect the beneficial use designation of the Pacific Ocean for industrial water supply.

Construction impacts on the SP Shelf to navigation are discussed in Chapter 19. Navigation off the coast of California or the ships entering and exiting the ports of Los Angeles and Long Beach would not be affected. Therefore, construction would not affect the beneficial use designation of navigation.

The construction area on the SP Shelf is not a location that would be typically used for contact recreation. It is approximately 7 miles offshore and, therefore, is too far from the coast for recreational swimming, surfing, or other recreational water contact activities. This site is too deep to provide typical opportunities for SCUBA diving and has no natural features that would attract SCUBA divers. As discussed in Chapter 4, the location of construction is far offshore; therefore, coastal viewers would not see any surface turbidity generated by construction activities. Those using the ocean for non-contact recreation such as boating may see some surface turbidity. However, as also discussed in Chapter 4, water-based recreationists are generally not stationary, and their views would be temporary as they passed by the construction site. Therefore, construction would not affect the designated beneficial use of contact recreation, non-contact recreation, or aesthetics.

Reefs and rocky outcroppings fished by recreational anglers and sport fishing boats occur along the shelf edge; however, most recreational reefs, including the area of the SP Shelf commonly known as Horseshoe Kelp, are located inshore of the project at shallower depths (Sloan pers. comm. 2007). Recreational species taken on the SP Shelf reefs include rockfishes, lingcod, ocean whitefish, and California

scorpionfish. The SP Shelf construction area is a relatively flat area with little rocky structure in the immediate vicinity. The nearest known recreationally fished reef is approximately 3 miles southeast of the riser area at a shallower depth (Sloan pers. comm. 2007). During construction, pile driving could result in injuries to fishes at a maximum of approximately 2,400 feet away. This reef is located outside of this distance. The construction of the SP Shelf diffuser would provide hard substrate in a relatively flat area with little rocky structure in the immediate vicinity. Therefore, construction of the SP Shelf diffuser would provide reef-like hard-bottom substrate in an area where there is none. This could increase the recreational catch of rockfishes, kelp greenling, lingcod, ocean whitefish, and California scorpionfish. Therefore, construction would not affect the beneficial use designation of recreational fishing.

The SP Shelf is located within commercial Catch Block 740, as identified in Appendix 13-A. In 2006, six methods of commercial take were reported for fishes in Catch Block 740 including collection by various traps and nets, hook and line, longlines, harpoon and spear, set and drift gill nets, purse seines, and trawls (CDFG 2007). Total commercial fish catch for Block 740 in 2006 was nearly 437,000 pounds for 40 fish species with a total value of over $375,000 (CDFG 2007). The SP Shelf construction area is too deep for the commercial harvest of shellfish such as sea urchins by divers, and depth and lack of rocky habitat in the vicinity of the construction area would make the area impractical for commercial trap fishing for lobster and rock crab. Furthermore, areas that are actively fished for shellfish such as lobster and rock crab are generally nearshore and at depths that are generally between 20 and 100 feet. Therefore, they are at sufficient distances to not be affected by any surface turbidity or low DO impacts. The use of gill nets to harvest shellfish and other species is prohibited within 3 nautical miles of shore, with the additional condition that gill nets cannot be set at depths of less than 70 fathoms (420 feet); therefore, the SP Shelf construction area is not approved for gillnet harvesting.

Trawls for shrimp and other species could be used on the SP Shelf at the depths of construction; therefore, construction activities would result in a temporary loss of a relatively small area suitable for trawl fishing. The area restricted to shrimp and other species trawls during construction would be limited because of a slight reduction in soft-bottom available by physically blocking trawling in the area during construction (other types of commercial fishing, including net sets and hook and line would be blocked only at the footprint of surface vessels, while trawl paths would need to consider surface and bottom obstructions and anchor and mooring locations). Construction activities would result in a temporary loss of a relatively small area available for permitted commercial fishing (specifically shrimp or other species trawling), and would not impact the designated beneficial use.

Four species together contributed more than 81 percent of the value of the catch in 2006: California halibut, Pacific bonito, swordfish, and white croaker. Of these, bonito and swordfish are pelagic fisheries and are unlikely to be impacted during construction because they are surface fished, not trawled. White croaker is a nearshore species and would not be fished in the project area. Halibut, which would occur in the project area, is primarily a hook and line caught fish, which would not be impacted by construction. Therefore, construction activities would temporarily affect the beneficial use designation of shellfish and commercial fishing. However, because of the temporary nature and the limited area affected by construction, impacts on these beneficial uses would not occur.

Construction would convert approximately 10 acres of soft-bottom substrate to hard-bottom substrate and would slightly reduce the area suitable for trawling purposes. However, as discussed in Impact MAR-4, this is less than 0.1 percent of the soft-bottom habitat on the SP Shelf at midshelf depths, which does not contain any unique or distinguishing features that indicate it would be superior trawling substrate when compared to the other 99.98 percent of soft-bottom substrate on the SP Shelf. Therefore, the conversion of soft-bottom sediment to hard-bottom substrate during the construction of the SP Shelf diffuser would not affect the designated beneficial use of commercial fishing or shellfishing.

The construction area on the SP Shelf is not a known fish spawning area; however, some fishes may spawn in pelagic habitats, and there is no apparent reason for such fishes to avoid the construction area. The turbidity generated during construction and underwater sound associated with the pile driving could disturb fish spawning, although these impacts would be temporary and limited in area compared to similar habitat otherwise available on the SP Shelf. As discussed in the regional setting and Appendix 13-A, icthtyoplankton may be found in the project area, but impacts are not expected to be significant (see Impact MAR-4). Furthermore, the conversion of soft-bottom habitat to hard-bottom substrate would result in a change to a fish spawning area. However, the amount of soft-bottom habitat for fishes to use for spawning compared to hard-bottom substrate on the SP Shelf is substantial; therefore, the decrease in soft-bottom habitat would not constitute a significant impact. Furthermore, the hard-bottom substrate would provide opportunities for other fishes drawn to hard-bottom substrate to spawn. Therefore, construction would not affect the beneficial use designation of fish spawning.

Construction would have a potential impact on the offshore beneficial uses summarized in Table 13-15 and discussed in the analysis that follows.

Table 13-15. Summary of Potential Construction Impacts on Beneficial Uses – SP Shelf

Designated Offshore Beneficial Uses	Construction Impact
MAR – Marine Habitat	Potential impact because of permanent conversion of about 10 acres of soft-bottom seafloor habitat to hard-bottom habitat.
WILD – Wildlife Habitat	Potential impact because of permanent conversion of about 10 acres of soft-bottom seafloor habitat to hard-bottom habitat.
RARE – Rare, Threatened, or Endangered Species	Potential impact because of vessel collisions, entanglement, underwater sound.
MIGR – Migration of Aquatic Organisms	Potential impact because of vessel collisions, entanglement, underwater sound.

Although the NPDES permit and other construction permits would serve to maintain water quality, some of the beneficial uses designated for offshore may be affected temporarily. Mitigation measures summarized in previous sections would reduce significant impacts to less than significant.

As discussed in Impacts MAR-3, MAR-4, and MAR-5, protected and migrating species and soft-bottom marine habitat could be affected by vessel collisions, entanglement, and underwater sound. However, construction impacts would be mitigated through the implementation of MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i). Furthermore, less than 0.1 percent of the soft-bottom marine habitat at midshelf depths would be altered. Therefore, SP Shelf construction would not affect the beneficial use designation of marine habitat; wildlife habitat; migrating, rare, threatened, or endangered species after mitigation. As discussed in Impact MAR-4, soft-bottom marine habitat would be altered during construction due to turbidity and the dragging of anchor lines. However, as described in Impact MAR-4, soft-bottom habitat is not rare, and protected species do not rely on the habitat. Furthermore, less than 0.1 percent of the soft-bottom habitat at midshelf depths would be altered. Hard-bottom habitat is less prevalent on the SP Shelf. As discussed in Impact MAR-4, anchor lines could disrupt or destroy any hard-bottom habitat. Therefore, construction could affect the beneficial use designation of marine habitat; however, implementation of MM MAR-7j (same as MM MAR-4c) would reduce impacts on this beneficial use to less than significant. Furthermore, as described in Impacts MAR-3 and MAR-4, soft-bottom habitat is not protected, and protected species do not rely on the habitat. Less than 0.1 percent of the soft-bottom habitat would be altered. Therefore, construction on the SP Shelf would not affect the beneficial use designations of marine habitat; wildlife habitat; or rare, threatened, or endangered species after mitigation.

Construction permits and approvals are designed to protect the marine environment and the beneficial uses of ocean waters. Compliance with these requirements and implementation of mitigation measures for short-term impacts related to construction as presented in this EIR/EIS would reduce the impacts on beneficial uses to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the SP Shelf diffuser is described in Impact MAR-1. The effluent discharge would meet NPDES compliance requirements. Limitations and requirements of the existing NPDES permit protect the marine environment and the beneficial uses of ocean waters. As discussed in Impact MAR-1, the nature of the treated effluent would remain the same as the effluent currently released from the existing ocean outfalls because the JWPCP would continue to treat it to secondary levels. Furthermore, the physical design of the outfall would allow the same minimum dilution ratio of the effluent. Therefore, the effluent from the SP Shelf diffuser would have similar effects on water quality as the existing ocean outfalls effluent. Currently, the effluent from the existing ocean outfalls meets all water quality criteria identified in the NPDES permit.

Operation of the SP Shelf would result in either no or less than significant impacts on offshore beneficial uses as summarized in Table 13-16 and discussed in the analysis that follows.

Table 13-16. Summary of Operational Impacts on Offshore Beneficial Uses – SP Shelf

Offshore Beneficial Uses	Operational Impact
IND – Industrial Service Supply	No impact because of distance and no available users.
NAV – Navigation	No impact because of location.
REC 1 – Water Contact Recreation	No impact because of distance, public health.
REC 2 – Non-contact Water Recreation (including aesthetics)	No impact because of distance and location.
COMM – Commercial and Sport Fishing	No impact because of distance, depth, and habitat. Gear depth and other restrictions do not allow commercial gill net. Small area of bottom permanently lost to use by trawl fisheries.
SHELL – Shellfish Harvesting	No impact because of distance, depth, and habitat.
MAR – Marine Habitat	No impact on EFH.
WILD – Wildlife Habitat	No impact on EFH.
RARE – Rare, Threatened, or Endangered Species	Less than significant impacts on water quality, sediment quality, nutrients, and HABs related to protected species.
MIGR – Migration of Aquatic Organisms	No impact because of location and depth of the riser and diffuser.
SPWN – Spawning, Reproduction, and/or Early Development	No impact because of habitat.

Operation of the SP Shelf diffuser would not result in an impact on any designated beneficial use, as previously summarized and detailed herein. The analysis of operation impacts on designated beneficial uses is similar to the analysis for construction; however, the impacts would be less than those associated with construction, and no mitigation would be required. Mitigation is required for construction impacts because of the disturbance of sediment during construction activities. Construction activities could lead

to water quality concerns, risk of vessel collisions and entanglement to protected species associated with construction equipment, underwater sound generated by construction activities, and conversion of soft-bottom habitat to hard-bottom habitat. All of these impacts are specific to construction activities and would not occur under operating conditions.

As discussed in the construction analysis, industrial water users draw industrial water supplies from the Pacific Ocean immediately along the coast. Due to the location of the operational discharge, any effects on water quality caused by the discharge would be negligible at the limits of the mixing zone designated in the operational NPDES permit. Therefore, operation would not affect the beneficial use designation of the Pacific Ocean for industrial water supply.

Once the SP Shelf diffuser is operational, it would be located on the bottom of the ocean at a depth of 200 feet. Therefore, it would not affect navigation off the coast of California or the ships entering and exiting the ports of Los Angeles and Long Beach as discussed in Chapter 19. Consequently, operation would not affect the beneficial use designation of navigation.

As discussed previously in the construction analysis, the SP Shelf is not a location that would be typically used for contact recreation due to its distance offshore. As discussed in Impacts MAR-1 and MAR-6, the SP Shelf diffuser would be designed to meet the receiving water standards of the California Ocean Plan as well as the requirements of the JWPCP's existing RWQCB WDR order and NPDES permit. With compliance with these standards and requirements, there would be no health effects associated with the release of effluent at the SP Shelf to the public using beaches or the ocean for recreational or commercial fishing purposes. Once the diffuser is operational, it would be located on the bottom of the ocean at a depth of 200 feet; therefore, it would not be visible to boaters. Consequently, operation of the SP Shelf diffuser would not affect the designated beneficial use of contact recreation, non-contact recreation, or aesthetics.

The analysis associated with the designated beneficial uses of recreational fishing, commercial fishing, and shellfish is similar to the previous analysis for construction. Therefore, these three designated beneficial uses would not be impacted by the operation of the SP Shelf diffuser.

As discussed in Impacts MAR-3 and MAR-5, some protected species could be impacted by water quality or alteration of habitat used by protected species, but those impacts would be less than significant. As previously discussed in Impact MAR-3, operation of the SP Shelf diffuser does not have the potential to affect the frequency or location of HABs and no impact would occur.

As discussed in Impact MAR-5, operation of the SP Shelf diffuser is not expected to impede or disrupt the movement or migration of any whale, turtle, or fish species. The SP Shelf diffuser would be located on the seafloor of the SP Shelf and would be covered with ballast rock. It would be no more intrusive than the existing ocean outfalls or other permanent ocean structures. Furthermore, as demonstrated in Impacts MAR-1 and MAR-3, the treated effluent plume would maintain water quality on the shelf and, therefore, would not impact migrating species. Consequently, operation of the SP Shelf diffuser would not affect the beneficial use designation of migration of aquatic organisms.

As discussed previously in the construction analysis, the diffuser area on the SP Shelf is not a known fish spawning area; however, some fishes may spawn in pelagic habitats, and there is no reason for such fishes to avoid the outfall area under operating conditions. However, as discussed in MAR-3 and MAR-4, the operation of the SP Shelf riser and diffuser would be similar to that of the existing ocean outfall, which currently does not impact pelagic spawning. Furthermore, as identified in MAR-4, the operation of the SP Shelf riser and diffuser would not impact EFH. Therefore, impacts on fish spawning would not occur.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Rehabilitation of the existing ocean outfalls is described in Impact MAR-1. Rehabilitation of the existing ocean outfalls would take approximately 9 months, with in-water construction occurring for approximately 2 months. As discussed in Impact MAR-7 for construction on the SP Shelf, all construction activities would require acquisition and compliance with CWA Section 401 and Department of Army permits. Additionally, a spill prevention and control plan would be required for marine vessels carrying petroleum and nontank vessels over 300 gross tons. The plan would detail and implement spill prevention and control measures. Because of the depth range (20 to 50 feet [6 to 15 meters]) and location of the project, existing beneficial uses defined in the Basin Plan for Royal Palms Beach, the nearshore zone (the zone bounded by the shoreline and a line 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline), and the offshore zone would apply (LARWQCB 1994).

Construction would not have an impact on the offshore beneficial uses that are summarized in Table 13-17 and discussed in the analysis that follows.

Table 13-17. Summary of No Construction Impacts on Beneficial Uses – Existing Ocean Outfalls

Royal Palms Beach	Nearshore	Offshore	Beneficial Uses	Construction Impact
	X	X	IND – Industrial Service Supply	No impact because there is no industrial water supply at Royal Palms Beach and not designated as industrial water supply.
X	X	X	NAV – Navigation	No impact because of location and because there is no launching point for boats at Royal Palms Beach.
X	X	X	COMM – Commercial and Sport Fishing	No impact because commercial fishing for white croaker is not allowed in the construction area, advisories are in place for several other fish species, and temporary and localized loss of fishing during construction.

As discussed in Impact MAR-1, the rehabilitation of the existing ocean outfalls would generate turbidity during the placement of ballast rocks. Disturbed sediments would settle quickly, with initial drift generally off coast based on the currents in the area, as described in Impacts MAR-1 and MAR-2. Although the rehabilitation of the existing ocean outfalls would be nearer to the coastline, the general direction of the currents and the rate of settling would allow much of the turbidity generated by the construction to stay away from the coastline and any industrial users. As discussed previously, the California coastline provides an industrial water supply. However, there are no industrial water users at Royal Palms Beach and industrial water supply is not designated a beneficial use for the beach. Therefore, construction at the existing ocean outfalls would not affect the beneficial use designation of industrial supply nearshore or offshore.

There are no boat launches at Royal Palms Beach, and the beach itself is not used for navigation; therefore, there would be no impact on the beneficial use designation of navigation at Royal Palms Beach. Also, as

discussed in Chapter 19, rehabilitation of the existing ocean outfalls would not impact navigation of vessels. Therefore, construction at the existing ocean outfalls would not affect the beneficial use of navigation.

The area around the existing ocean outfalls has limits on the type of commercial and recreational fishing that can occur based on consumption warnings for certain fish. For example, this area is closed to commercial white croaker fishing, and advisories are in place for consumption of fishes from the area for commercial and recreational fishing purposes. However, there are commercial and recreational shellfish fisheries (lobster and rock crab – 20- to 100-foot depth) and hook and line fisheries, such as bass, that are available in the area of the existing ocean outfalls for commercial and sports fishing. Several existing reefs used by sports fishermen are located in the general area of the existing ocean outfalls (Royal Palms Beach, nearshore, and offshore including the pipeline itself). However, construction would only require the placing of ballast rocks and the fixing of outfall joints at depths of up to 50 feet for approximately 2 months. Therefore, construction activities would result in a temporary loss of a relatively small area available for permitted shellfishing (lobster and rock crab) and commercial/recreational fishing at Royal Palms Beach, nearshore, and offshore. Given the temporary nature and the limited area affected by construction, impacts on these beneficial uses would not occur.

Construction would have a potential impact on the offshore beneficial uses summarized in Table 13-18 and discussed in the analysis that follows.

Table 13-18. Summary of Potential Construction Impacts on Beneficial Uses – Existing Ocean Outfalls

Royal Palms Beach	Nearshore	Offshore	Beneficial Uses	Construction Impact
X	X	X	REC 1 – Water Contact Recreation	Potential impact because of temporary and localized loss of beneficial use in nearshore and offshore areas during construction.
X	X	X	REC 2 – Non-contact Water Recreation (including Aesthetics)	Potential impact because of temporary and localized loss of beneficial use in nearshore and offshore areas during construction.
X	X	X	SHELL – Shellfish Harvesting	Potential impact because of temporary loss of a relatively small area available for permitted fishing activities during construction.
X	X	X	MAR – Marine Habitat	Potential impact because of temporary loss of hard-bottom habitat at the work site.
X	X	X	WILD – Wildlife Habitat	Potential impact because of temporary loss of hard-bottom habitat at the work site.
	X		BIOL – Preservation of Biological Habitats	Potential impact because of temporary loss of hard-bottom habitat at the work site.
	X	X	RARE – Rare, Threatened, or Endangered Species	Potential impact because of underwater sound, vessel collisions, and entanglement.
	X	X	MIGR – Migration of Aquatic Organisms	Potential impact because of underwater sound, vessel collisions, and entanglement.
P	X	X	SPWN – Spawning, Reproduction, and/or Early Development	Potential impact because of on-shore habitat.

P = potential beneficial use

Rehabilitation of the existing ocean outfalls would temporarily reduce contact recreational opportunities such as swimming, SCUBA diving, and surfing in the immediate vicinity of the existing ocean outfalls for up to 9 months. Royal Palms Beach and the nearshore area are designated for those types of water

contact recreation. However, there are over 62 locations designated for swimming, SCUBA diving, and surfing within 50 miles of the existing ocean outfalls. With the reduction of water contact recreation at Royal Palms Beach and nearshore, people would have multiple other locations from which to choose. Additionally, recreational boats, kayaks, or other non-contact water recreation would be temporarily barred from using the ocean in the immediate vicinity of the construction barges and other equipment. However, there is nothing unique or specific about the ocean surface over the existing ocean outfalls that the temporary closure of this area would prevent the public from experiencing. Furthermore, the remaining coastline and nearshore of Southern California would remain available to these types of recreational users during the temporary construction period. Therefore, rehabilitation of the existing ocean outfalls would not affect the beneficial use designations of water contact or non-contact recreation for Royal Palms Beach, nearshore, or offshore.

As discussed in Impact MAR-4, in the area of the new ballast rock placement, the new rock is expected to be recolonized rapidly by a community similar to that found on the existing rocks. Therefore, construction would not affect the beneficial use designation of habitat, wildlife, or the preservation of biological habitats.

As previously discussed in Impacts MAR-3, MAR-4, and MAR-5, the impacts associated with vessel collisions, entanglement, and underwater sound, on protected and migrating species would be less than significant. Additionally, as discussed in Impact MAR-3, implementation of MM MAR-7k (same as MM MAR-3j) would reduce impacts on black abalone to less than significant. Therefore, construction would not affect the beneficial use of protected (rare, threatened, and endangered) species or migrating aquatic organisms.

California grunion (*Leuresthes tenuis*) are unique for utilizing beaches throughout Southern California for spawning and depositing eggs. Grunion spawning occurs at night during the highest tides of the month, with “runs” occurring over several nights twice per month from March through August. Use of any particular beach by grunion for spawning during any particular run cannot be predicted, but spawning is known to occur at Royal Palms Beach in spring and summer months. Construction activities associated with the rehabilitation of the existing ocean outfalls would be conducted near- and offshore and, therefore, would not directly impact beach spawning by these fish. Rehabilitation of the existing ocean outfalls would not be conducted during nighttime hours, which is when the fish spawn. Safety lights would be left on the rehabilitation barge, but all other activities would cease during the nighttime. Therefore, construction would not affect the beneficial use designation of fish spawning.

Construction permits and approvals are designed to protect the marine environment and the beneficial uses of ocean waters. Compliance with these requirements and implementation of mitigation measures for short-term impacts related to construction as presented in this EIR/EIS would reduce the impacts on beneficial uses to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps’ NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the rehabilitated existing ocean outfalls is described in Impact MAR-1. Beneficial uses in the existing ocean outfalls area were also previously discussed. As discussed in Impact MAR-1, the limitations and requirements of the existing NPDES permit protect the marine environment and the beneficial uses of ocean waters. Based on past and present performance of the JWPCP secondary treatment and the past and present performance of the existing ocean outfalls, the treated effluent discharges through the existing outfalls currently meet the NPDES requirements and protect the designated beneficial uses. As described in Impact MAR-1, because post-rehabilitation operational volumes would be less than, and effluent quality would the same as, existing conditions, continued use of the JWPCP discharge would not impair beneficial uses designated in the California Ocean Plan.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the SP Shelf and on the existing ocean outfalls for Alternative 1 (Project) would impair beneficial uses designated in the California Ocean Plan. Construction impacts under CEQA would be significant before mitigation. Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Vessel Collisions

Implement MM MAR-7a through MM MAR-7c (same as MM MAR-3a through MM MAR-3c).

Entanglement

Implement MM MAR-7d through MM MAR-7g (same as MM MAR-3d through MM MAR-3g).

Underwater Sound

Implement MM MAR-7h and MM MAR-7i (same as MM MAR-3h and MM MAR-3i).

Marine Habitat

Implement MM MAR-7j (same as MM MAR-4c).

Removal of Protected Species

Implement MM MAR-7k (same as MM MAR-3j).

Residual Impacts

Residual impacts would be less than significant. See the residual impacts discussion under Impact MAR-3.

NEPA Impact Determination

Construction of the riser and diffuser on the SP Shelf and on the existing ocean outfalls for Alternative 1 (Project) would impair beneficial uses designated in the California Ocean Plan. Construction impacts

under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM MAR-7k (same as MM MAR-3j).

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

13.4.3.3 Impact Summary – Alternative 1

Impacts on the marine environment analyzed in this EIR/EIS for Alternative 1 are summarized in Table 13-19. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Alternative 1 (Program) does not include marine elements and has no potential to have an impact on the marine environment; therefore, an Impact Summary – Alternative 1 (Program) table is not included.

Table 13-19. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact MAR-1. Would Alternative 1 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?				
Riser/Diffuser Area				
SP Shelf	CEQA Significant Impact During Construction	N/A	MM MAR-1a. During riser and diffuser construction, analyses of contaminant concentrations (i.e., metals, dichlorodiphenyltrichloroethane [DDT], polychlorinated biphenyls [PCBs], polycyclic aromatic hydrocarbons [PAHs]) in waters near the dredging operations will be required if the contaminant levels in the dredged sediments are known to be elevated and represent a potential risk to beneficial uses. Monitoring data will be used to demonstrate that water quality limits specified in applicable state and federal permits are not exceeded. Corrective or adaptive actions would be implemented if the monitoring data indicate that water quality conditions outside the mixing zone are above the permit-specified limits. MM MAR-1b. Prepare and implement a contaminated sediment management plan that is consistent with practices outlined in the Los Angeles Regional Contaminated Sediment Task Force long-term management strategy if contaminant levels in the dredged sediments are known to be elevated and represent a potential risk. At a minimum, the plan will include site-	CEQA Less Than Significant Impact During Construction

Table 13-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			specific best management practices at the immediate work site to reduce the potential area of exposure to contaminated sediments.	
	NEPA Significant Impact During Construction	Direct	MM MAR-1a and MM MAR-1b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-2. Would Alternative 1 (Project) substantially degrade marine sediment quality or character?				
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 13-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-3. Would Alternative 1 (Project) result in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?				
Riser/Diffuser Area				
SP Shelf	CEQA Significant Impact During Construction	N/A	*Vessel Collisions* MM MAR-3a. Prepare and implement a collision protection plan to address sensitive and protected species. All construction personnel and boat operators will receive protected species training. The training will include review of the plan as well as identification of animals, species, and habitats potentially present in the project area. MM MAR-3b. Restrict tugs, tugs with barges under tow, and large work vessels to speeds of 12 knots (14 miles per hour [mph]) or less at all times. Maneuverable single hull vessels such as crew or supply boats may proceed at speeds of 20 knots (23 mph) or less under most conditions, but will reduce speed to 12 knots or less when whales or sea turtles are reported in the project area. MM MAR-3c. Immediately report all vessel collisions with marine mammals or sea turtles to the National Marine Fisheries Service. *Entanglement* MM MAR-3d. Limit the deployment of any material that has the potential to entangle marine mammals or sea turtles (e.g., anchor lines, cables, rope, other construction debris) to only as long as necessary. MM MAR-3e. Remove as much slack as possible from any potentially entangling material to the point of not jeopardizing construction operations. MM MAR-3f. Position temporary mooring buoys with heavy steel cables or chains to minimize potential entanglements.	CEQA Less Than Significant Impact During Construction

Table 13-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			MM MAR-3g. In the event that a marine mammal or sea turtle becomes entangled, immediately seek guidance from the National Marine Fisheries Service for safe disentanglement options. *Underwater Sound* MM MAR-3h. Implement a "soft start" method for all pile driving by operating the hammer at less than full capacity (i.e., approximately 40 to 60 percent energy levels) with no less than a 1-minute interval between each strike for a 5-minute period on initial driving for the day, or after a delay of 15 minutes between strikes. MM MAR-3i. Prepare and implement a pile driving management plan. The plan will require that a National Marine Fisheries Service–approved observer be stationed on the work platform or work vessel to monitor the presence of sensitive marine species in the construction area on all days when pile driving is taking place. The observer will survey the project vicinity before pile driving is started and give approval before such work begins. The observer will continue to advise the construction crew throughout the day to modify or stop pile driving if a sensitive or protected species travels within injury distances.	
	NEPA Significant Impact During Construction	Direct	MM MAR-3a through MM MAR-3i	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	*Removal of Protected Species (Black Abalone)* MM MAR-3j. Within 90 days prior to initiation of the rehabilitation work, survey the existing ocean outfall pipelines for black abalone at depths between the 15- and 55-foot isobaths in areas potentially affected by the work. The survey team will include divers/biologists experienced in locating abalone. If black abalone are determined to be present, consult with the National Marine Fisheries Service to	CEQA Less Than Significant Impact During Construction

Table 13-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			develop a black abalone transplantation plan that includes the identification of a suitable nearby transplant location, temporary holding and transport methods, and reporting requirements. Implementation of the plan will occur no more than 30 days preceding the in-water rehabilitation activities and will be conducted by qualified divers/biologists.	
	NEPA Significant Impact During Construction	Direct	MM MAR-3j	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-4. Would Alternative 1 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?				
Riser/Diffuser Area				
SP Shelf	CEQA Significant Impact During Construction	N/A	*Underwater Sound* MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) *Marine Habitat* MM MAR-4c. Prepare and implement an anchoring plan prior to in-water construction activities in accordance with the U.S. Corps of Engineers' permitting requirements. The plan will identify deployment methods for anchors, lines, cables, and moorings to minimize damage to hard-bottom substrate.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) MM MAR-4c	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 13-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-5. Would Alternative 1 (Project) interfere with the movement/migration corridors of marine biota?				
Riser/Diffuser Area				
SP Shelf	CEQA Significant Impact During Construction	N/A	*Vessel Collisions* MM MAR-5a through MM MAR-5c (same as MM MAR-3a through MM MAR-3c) *Entanglement* MM MAR-5d through MM MAR-5g (same as MM MAR-3d through MM MAR-3g) *Underwater Sound* MM MAR-5h and MM MAR-5i (same as MM MAR-3h and MAR-3i)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-5a through MM MAR-5i (same as MM MAR-3a through MM MAR-3i)	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-6. Would Alternative 1 (Project) adversely affect public health?				
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 13-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-7. Would Alternative 1 (Project) impair beneficial uses designated in the California Ocean Plan?				
Riser/Diffuser Area				
SP Shelf	CEQA Significant Impact During Construction	N/A	*Vessel Collisions* MM MAR-7a through MM MAR-7c (same as MM MAR-3a through MM MAR-3c) *Entanglement* MM MAR-7d through MM MAR-7g (same as MM MAR-3d through MM MAR-3g) *Underwater Sound* MM MAR-7h and MM MAR-7i (same as MM MAR-3h and MM MAR 3i) *Marine Habitat* MM MAR-7j (same as MM MAR-4c)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i) MM MAR-7j (same as MM MAR-4c)	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	*Removal of Protected Species* MM MAR-7k (same as MM MAR-3j)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-7k (same as MM MAR-3j)	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

13.4.4 Alternative 2

13.4.4.1 Program

Alternative 2 (Program) does not include marine elements and, therefore, has no potential to have an impact on the marine environment.

13.4.4.2 Project

The impacts for the rehabilitation of the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact MAR-1. Would Alternative 2 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

Construction activities on the PV Shelf would be very similar to those described for the SP Shelf in Alternative 1 (Project) under Impact MAR-1. Construction on the PV Shelf would take approximately 3 years, likely beginning in 2018 and ending in 2021. The riser would be constructed in the same manner as for the SP Shelf and have the same inner and outer casing dimensions. Construction within the casing is expected to take the same amount of time (21 months), and the water and sediments within the casings would be removed in the same manner. Construction of the diffuser on the PV Shelf would not include trenching and thus would not include sidecasting or bringing sediment to the surface. Some grading activities would take place on the seafloor and would be similar to land-based grading. Activities would involve flattening and smoothing the sea floor to prepare it for rock ballast and diffuser placement, and would occur closer to the shore and at a shallower depth than for the SP Shelf. The distance from Point Fermin would be approximately 2 miles and the depth would be approximately 175 feet. Construction activities could potentially impact water quality.

As discussed for Alternative 1 (Project), a CWA Section 401 Water Quality Certification from the RWQCB that contains conditions including standard WDRs and a Department of Army permit from the Corps would be acquired for in-water construction activities on the PV Shelf. As discussed in Appendix 13-A, sediment contamination levels at a station sampled near the riser location have declined from historic levels. Prior to all in-water construction, the sediment would be sampled in the immediate project area to determine sediment contaminant levels and all grading would be performed in accordance with permit requirements. A spill prevention and control plan would be required for marine vessels carrying petroleum and nontank vessels over 300 gross tons. The plan would detail and implement spill prevention and control measures. Riser and diffuser construction on the PV Shelf would result in similar water quality impacts as those described for the SP Shelf, such as disturbing and resuspending near-bottom sediments, changing the levels of DO, and possibly releasing nutrients. These effects would result in temporary and localized changes to some water quality indicators in the mixing zone defined by the CWA Section 401 Water Quality Certification. Water quality in the vicinity of construction would be

affected, but the effects would generally not extend beyond the mixing zone or persist following the completion of construction.

Turbidity

The physical characteristics of the sediments on the PV Shelf influence turbidity in the water column. These sediments are similar to the SP Shelf, as identified in the project setting (Section 13.2.2) and Appendix 13-A. Turbidity associated with grading the seafloor and placing the ballast rocks would be much less than turbidity generated for the SP Shelf construction because sidecasting or removal of seafloor sediment would not be implemented on the PV Shelf. Long-term current velocities of 0.3 ft/sec at project depths on the PV Shelf are slightly slower than those found on the SP Shelf, resulting in a smaller area of distribution as the sediments settle following disturbance by grading or placing ballast rocks. The studies discussed in Alternative 1 (Project) under Impact MAR-1 for construction on the SP Shelf suggest that near-bottom turbidity generated by construction activities would settle to the bottom within approximately 2 hours. Therefore, turbidity during construction represents a less than significant impact on water quality.

Water quality is also influenced by the chemical composition of the sediments mobilized during activities that cause turbidity. The PV Shelf is located within the EPA-designated DDT/PCB study area. Construction activities on the PV Shelf would be more limited than those on the SP Shelf, and would only include grading of the seafloor and placing of ballast rocks. During preparation of the seafloor, sediment would not be sidecast or brought to the surface for onshore disposal. Conditions in the CWA Section 401 and the CWA Section 404 permits would require implementation of appropriate sediment management practices to minimize water quality impacts. Monitoring of contaminant concentrations in waters near sediment-disturbing activities would be required. Both permits would require adaptative management of in-water work that would be implemented if the monitoring data indicate that water quality conditions outside the mixing zone would be noncompliant with permit-specified limits. Because elevated levels of DDT and mercury have been identified on the PV Shelf, MM MAR-1a and MM MAR-1b are required, and would reduce any significant impacts associated with suspension of contaminated sediment to less than significant. Impacts on the surrounding sediment and on protected species and local biological communities and habitat related to contaminated sediment are discussed in Impacts MAR-2, MAR-3, and MAR-4.

Dissolved Oxygen

Removal of the riser casing after construction of the diffuser vault would occur on the PV Shelf as described for Alternative 1 (Project) on the SP Shelf. Local currents in the project area averaged almost 0.3 ft/s over a 9-year study period. At this rate, currents are expected to mix and disperse the entrained water with ambient water over a distance of more than 1,180 feet within 1 hour of release. Within approximately 1 day, the entrained water would be diluted and dispersed over 5.4 miles and a residual plume is likely to be undetectable. Ambient water conditions are expected to be found in the area within hours to a day following release. Therefore, water quality impacts resulting from the removal of the riser casing would be less than significant.

Nutrients and Harmful Algal Blooms

The sediment on the PV Shelf is known to contain nutrients. The depth of construction activities on the PV Shelf is approximately 75 feet below the trapping layer for most of the year. This would minimize the possibility of nutrients from reaching phytoplankton closer to the sea surface and would prevent any blooms that could be caused by the release of nutrients. Therefore, nutrient and HAB impacts resulting from construction on the PV Shelf would be less than significant.

Spills

As described in Section 13.4.1, a spill prevention and control plan would be required for marine vessels carrying petroleum and nontank vessels over 300 gross tons. The plan would detail and implement spill prevention and control measures. If an accidental spill were to occur, the response and notification actions required by the plan would immediately be implemented. These would include efforts to contain and neutralize the spill, such as deploying floating booms to contain and absorb the spill and using pumps to assist the cleanup. Such measures would likely prevent the accidental spill from causing any persistent degradation of water quality. Therefore, significant water quality impacts are not expected to occur as a result of accidental spills of pollutants during in-water construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the PV Shelf diffuser would be the same as those discussed for the SP Shelf in Alternative 1 (Project) under Impact MAR-1. The new ocean discharge system on the PV Shelf would operate continuously, as similarly described in Alternative 1 (Project) under Impact MAR-1 for the SP Shelf. There would be no difference in the operation of the JWPCP or the physical design of the PV Shelf diffuser as compared to the SP Shelf diffuser. Although the PV Shelf diffuser would be located at a depth of approximately 175 feet, operational volumes and effluent quality discharged through the PV Shelf diffuser would be similar to existing discharge conditions at the existing ocean outfalls, and discharge depths and predicted trapping depths are comparable to the existing JWPCP discharge site. Therefore, a similar discharge on the PV Shelf would not result in pollution, contamination, nuisance, or violation of regulatory standards. The new ocean discharge system would be required to comply with NPDES provisions, which prohibit contamination, pollution, or nuisance.

Water Quality

As discussed in Alternative 1 (Project) under Impact MAR-1, an NPDES permit, required by the CWA and enforced by the LARWQCB, is necessary for any effluent discharges into the Pacific Ocean. The NPDES permit contains several regulatory requirements including both effluent and receiving water limits and requirements for certain treatment processes to maintain water quality in the receiving water (e.g., the Pacific Ocean) (Appendix 13-E). As discussed in Alternative 1 (Project) under Impact MAR-1, the operation of the JWPCP and the physical design of the existing ocean outfalls allow the Sanitation Districts to meet the effluent limitations and performance goals outlined in the NPDES permit and maintain water quality off the coast of Southern California; this would be the same for the PV Shelf diffuser.

The JWPCP NPDES permit would be updated before operation of the PV Shelf diffuser. The JWPCP would continue to use secondary treatment to produce treated effluent, and the effluent would continue to be chlorinated prior to release to the Pacific Ocean. The PV Shelf diffuser would be constructed with diffuser ports spaced to provide initial dilution of 166:1 or greater. As identified in the project setting (Section 13.2.2), the localized currents on the PV Shelf are similar in velocity to those at the existing ocean outfalls on the PV Shelf and the SP Shelf, but may be seasonally somewhat more variable in direction. Similar to the existing ocean outfalls, the discharged effluent plume would likely move primarily upcoast, particularly in winter; however, in summer, upslope currents in the riser area may entrain the plume, with flow to the south and east across the SP Shelf. The Sanitation Districts would continue to regularly monitor for all the constituents identified in the NPDES permit authorizing the

discharge. Because the operation of the JWPCP would not change and the PV Shelf diffuser would be designed to perform equal to or better than the existing ocean outfalls, impacts on water quality from the operation of the PV Shelf diffuser would be less than significant.

Nutrients and Harmful Algal Blooms

As discussed in Alternative 1 (Project) under Impact MAR-1, there is no evidence that outfall discharges influence the distribution or abundance of HABs. If nutrients from the JWPCP and other SCB discharges were associated with HABs, the events would likely have been present in the SCB for decades. Because operational volumes and effluent quality discharged through the PV Shelf diffuser would be similar to existing discharge conditions at the existing ocean outfalls, and discharge depths and predicted trapping depths are comparable with the existing JWPCP discharge site, it is unlikely that relocating the JWPCP discharge would cause any change in the phytoplankton response between sites and thereby result in HABs (Appendix 13-B). Therefore, impacts associated with nutrients and HABs would be less than significant.

In summary, because operational volumes and effluent quality discharged through the new PV Shelf diffuser would be similar to the existing conditions, and discharge depths and predicted trapping depths would be comparable to the existing ocean outfalls, it is unlikely that a similar discharge on the PV Shelf would result in pollution, contamination, nuisance, or violation of regulatory standards. The new ocean discharge system would comply with NPDES provisions, which prohibit contamination, pollution, or nuisance. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the PV Shelf for Alternative 2 (Project) would create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC. Impacts under CEQA would be significant before mitigation. Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation

Implement MM MAR-1a and MM MAR-1b.

Residual Impacts

Impacts would be less than significant. See residual impacts discussion in Alternative 1 (Project) under Impact MAR-1.

NEPA Impact Determination

Construction of the riser and diffuser on the PV Shelf for Alternative 2 (Project) would create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM MAR-1a and MM MAR-1b.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact MAR-2. Would Alternative 2 (Project) substantially degrade marine sediment quality or character?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

The PV Shelf contains primarily fine silty sediment and hard substrate. There are approximately 19,335 acres of soft-bottom sediments on the PV Shelf at depths of 100 to 400 feet (30 to 120 meters). Soft-bottom sediments provide habitat for a variety of species, which comprise the benthic epifauna and infauna. As discussed in the project setting and Impact MAR-1, the construction area is located within the EPA-designated DDT/PCB study area. Construction activities on the PV Shelf could disturb near-bottom sediments for the duration of the construction period. Sediment would be considered degraded if it becomes contaminated with chemicals, thereby reducing its quality, or if the character of the sediment is substantially altered (e.g., changing from fine silty sediment to large course sediment or vice versa) during construction activities.

Construction of the PV Shelf riser and diffuser and its impacts on turbidity in the marine environment are described in Impact MAR-1. Based on current velocity and settling times on the PV Shelf, sediments disturbed by construction activities would most likely be redeposited in areas close to their point of origin and of similar sediment quality and characteristics. Additionally, the construction activities would not add contaminants to the sediment. Therefore, the disturbance of bottom sediments as a result of construction would be expected to be short term and localized and sediment quality or character would not be substantially degraded. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Impacts on sediments as a result of operations under Alternative 2 (Project) would be the same as for Alternative 1 (Project). The new diffuser on the PV Shelf would operate the same as the new diffuser on the SP Shelf.

The operation of the PV Shelf diffuser could change the quality of the sediment by deposition of particles in discharged effluent. However, data from the existing ocean outfalls and studies of the city of San Diego PLWTP outfall show that the effluent would not substantially degrade sediment character or quality. As discussed in Impact MAR-1, some organic enrichment in the vicinity of the new PV Shelf diffuser would occur; however, as demonstrated by the city of San Diego, and in the ongoing monitoring of the existing ocean outfalls, enrichment would be variable and transitory near the diffuser. The legacy contamination in the existing sediment of the PV Shelf would continue to remain in the area where the diffuser would operate; however, because the discharge of DDT/PCBs into the sewer system ceased in the 1970s, operation of the PV Shelf riser and diffuser would not substantially degrade marine sediment quality or character. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation of Alternative 2 (Project) would not substantially degrade marine sediment quality or character. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 2 (Project) would not substantially degrade marine sediment quality or character before mitigation. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact MAR-3. Would Alternative 2 (Project) result in the substantial loss of individuals or the reduction of existing habitat, of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

Construction on the PV Shelf would take approximately 3 years beginning 2018 and ending in 2021. Vessel traffic during this time would be the same as described for the SP Shelf and would depend on the type of diffuser constructed. In addition, barges would make round trips between LA-2 and/or LA-3 and the Port of Los Angeles or the construction area for disposing of excavated tunneling and excavated riser material. Pile driving of the jack-up barge legs would be of the same duration as described for the SP Shelf, but would likely take place in 2018.

Impacts on protected species during construction of the riser and diffuser on the PV Shelf for Alternative 2 (Project) would be similar to construction of the riser and diffuser on the SP Shelf analyzed under Alternative 1 (Project). With the addition of the California least tern (potential impacts are the same as those presented for the California brown pelican in Alternative 1 [Project]), the species and potential impacts would be the same for the PV Shelf. Short-term construction impacts on the PV Shelf are associated with temporary increases in the potential for collision with vessels or entanglement in

anchor or buoy cables and lines, rope, or other debris for the duration of construction. Short-term increases in underwater sound could result in the displacement, and possibly injury, of individuals within the immediate vicinity of the work area during pile driving activities. Short-term, temporary impacts on protected species would result from turbidity or reduction in water quality during construction.

Vessel Collisions, Entanglement, Underwater Sound

Impacts on protected species at the PV Shelf location associated with vessel collisions, entanglement, and underwater sound would be the same as discussed in Alternative 1 (Project) under Impact MAR-3 for the SP Shelf. The levels of underwater sound generated by pile driving would be the same, because the activities would be the same; however, the locations impacted would be different. Underwater impacts are presented on Figure 13-9. Impacts associated with vessel collisions, entanglement, and underwater sound would be considered significant before mitigation. Implementation of MM MAR-3a through MM MAR-3i would reduce these impacts to less than significant.

Sediment Quality

The PV Shelf site is within the EPA-designated DDT/PCB study area. As discussed in Impacts MAR-1 and MAR-2, construction activities on the PV Shelf would result in increased turbidity and disturbance of sediment. Suspension of DDT/PCB contaminated sediments would result in increased availability of DDT/PCB to benthic and pelagic organisms and the local food web, which could impact protected species relying on these organisms as sources of food (Eganhouse and Venkatesan 1993:121–122). DDT/PCB can become available through two pathways, both of which would increase the amount of DDT/PCB available to organisms, which could increase concentrations of DDT/PCB in higher trophic levels. However, because sediment-disturbing trenching would not be implemented on the PV Shelf, and the water column turbidity generated by construction activities would be expected to be short term and remain localized, the impact of potential exposure to contaminated sediment on benthic species and the food chain would be less than significant.

Water Quality

As discussed in Alternative 1 (Project) under Impact MAR-3, surface turbidity would result in impacts on foraging for certain species. California least terns forage over the PV Shelf, including the construction location, because there are nearby nesting sites in the port complex (Atwood and Minsky 1983). Impacts associated with surface turbidity generated by construction activities on California least terns would be similar to those described for marine birds in Alternative 1 (Project) under Impact MAR-3. Therefore, local surface turbidity would not substantially reduce foraging opportunities for the California least tern. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

As discussed in Impact MAR-1, the new ocean discharge system on the PV Shelf would operate continuously, and the only difference in operation of the JWPCP or the physical design of the PV Shelf diffuser compared to the SP Shelf diffuser would be a reduction in depth for the discharge to 175 feet. The depth of the PV Shelf discharge is approximately 75 feet below the trapping layer. Protected species and the potential impacts that could occur as a result of the operation of the PV Shelf diffuser would be the same as those on the SP Shelf. Once constructed, the impacts on protected species during operation of

the PV Shelf diffuser under Alternative 2 (Project) would be similar to operation of the diffuser on the SP Shelf under Alternative 1 (Project). Protected species and the potential operation impacts would be the same for the PV Shelf diffuser. Impacts on California least terns would be similar to those presented for California brown pelicans.

Nutrients and Harmful Algal Blooms

The operation and water quality associated with the PV Shelf diffuser are discussed in detail in Alternative 1 (Project) under Impact MAR-1 and in Alternative 2 (Project) under Impact MAR-1. Impacts on protected species associated with water quality could occur because of the operation of the diffuser. Nutrients and HABs have historically affected marine species. However, as discussed in Alternative 1 (Project) under Impact MAR-1 and Alternative 2 (Project) under Impact MAR-1, operation of the PV Shelf diffuser would not have the potential to affect the frequency or location of HABs. Furthermore, the diffuser's physical construction and location, and the existing conditions on the PV Shelf would not create pollution or contamination that would impact protected species. Therefore, impacts on protected species would be less than significant.

Sediment Quality

As discussed in Appendix 13-A and Impact MAR-1, sediment contamination levels at a station sampled near the proposed riser location have declined from historic levels, and further improvements over time are likely. As discussed in Impact MAR-2, legacy contamination in the existing sediment of the PV Shelf would continue to remain in the riser/diffuser area; however, because the discharge of DDT/PCBs into the sewer system ceased in the 1970s, operation of the PV Shelf diffuser would not disturb the existing legacy sediment contamination or increase the volume or concentrations such that effects on protected species would occur. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the PV Shelf and on the existing ocean outfalls for Alternative 2 (Project) could result in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern. Impacts under CEQA would be significant before mitigation. Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation

Vessel Collisions

Implement MM MAR-3a through MM MAR-3c.

Entanglement

Implement MM MAR-3d through MM MAR-3g.

Underwater Sound

Implement MM MAR-3h and MM MAR-3i.

Removal of Protected Species (Black Abalone)

Implement MM MAR-3j.

Residual Impacts
Residual impacts would be less than significant. See the residual impacts discussion under Alternative 1, Impact MAR-3.

NEPA Impact Determination
Construction of the riser and diffuser on the PV Shelf and on the existing ocean outfalls for Alternative 2 (Project) could result in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation
Implement MM MAR-3a through MM MAR-3j.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact MAR-4. Would Alternative 2 (Project) result in the substantial degradation or disruption of habitat for marine biota or local biological communities?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
This analysis discusses non-protected marine biological resources, such as local biological communities and marine habitat. Local biological communities and marine habitat present on the PV Shelf are specifically discussed in Sections 13.2.1.5 and 13.2.2.1. Local biological communities include plankton, invertebrates, fishes, soft-bottom habitat, and EFH (see Impact MAR-3 for analysis of protected species). Construction of the riser and diffuser on the PV Shelf is generally described in Impact MAR-1, and Alternative 1 (Project) under Impact MAR-1. The potential impacts associated with construction of the PV Shelf riser and diffuser would be the same as those described for the SP Shelf diffuser.

Underwater Sound
The levels of underwater sound generated by the pile driving for the PV Shelf would be the same as for the SP Shelf because the activities would be the same; however, the locations impacted would be different. Fishes in the water column and on or near the ocean floor could be disturbed or injured by underwater construction activities. Most fishes would likely leave the immediate area of disturbance, although some may stay to feed on invertebrates released from the sediments (Anchor 2002:18–29). Noise impacts are depicted in Figure 13-9. However, there would be no substantial disruption of PV Shelf fish communities because the affected area represents only a small proportion of the total available open water and near-bottom habitat on the PV Shelf. In addition, the nearest rocky habitat to the proposed PV Shelf riser area is approximately 0.9 mile southeast of the riser area at a shallower depth (Sloan pers. comm. 2007), outside of the maximum distance of accumulated underwater sound impacts of 2,487 feet. Implementation of MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) would reduce the likelihood of disturbance or injury caused by underwater sound associated with pile driving to less than significant. As described under Impact MAR-3, impacts on fishes from vessel noise, which are expected to be minor and short term, would be less than significant.

Water Quality and Sediment Quality

As discussed in Impacts MAR-1 and MAR-2, construction activities on the PV Shelf could alter water and sediment quality, which would affect existing local biological communities by reducing foraging area, possibly releasing nutrients into the water column, or smothering existing benthic organisms with sediment.

Planktonic organisms would be temporarily affected by turbidity in the water column, as discussed in Alternative 1 (Project) under Impact MAR-4 for construction on the SP Shelf. However, impacts on phytoplankton, zooplankton, and ichthyoplankton are less than significant because construction would be short term and would only affect a limited area. Thus, planktonic organisms on the PV Shelf would not be substantially disrupted.

Impacts on benthic and epibenthic organisms located within the construction area include temporary disturbances from turbidity and sediment resuspension and deposition generated by construction activities. Lethal and sublethal direct effects that would occur during construction include mortality, arrested development, reduction in growth, reduced ingestion, depressed filtration rate, and increased mucous secretion. (EPA 2009b:Ch 5.)

The PV Shelf has approximately 19,335 acres of soft-bottom habitat between depths of 100 and 400 feet (30 and 120 meters). As discussed in Appendix 13-A, the different depths within this area are common across the entire midshelf and support common communities of benthic and epibenthic organisms. The direct construction laydown area for the riser, diffuser, and roadbeds on the PV Shelf would be approximately 5 to 10 acres, which is less than 0.1 percent of the entire soft-bottom habitat of the PV Shelf. Therefore, although construction activities may cause mortality and sublethal effects on benthic and epibenthic communities on the PV Shelf during construction, the construction activities would not actually result in a substantial degradation or disruption to these common communities. Furthermore, effects of turbidity and sediment deposition on the benthic habitat would be temporary, and the benthic and epibenthic communities that reside on the PV Shelf would recover. Previous studies offshore of Los Angeles and on the PV Shelf have examined the effects of sediment settling on benthic communities and recovery rates. Although there are some physical differences between the locations of these studies and the PV Shelf construction area, the benthic communities are very similar. Colonization of settled sediments by burrowing of buried residents or nearby organisms is expected to occur within hours or days following deposit, and later stage successional communities are expected within months to a year (MEC 1988:4-78 through 4-84). Similarly, the Palos Verdes Shelf Superfund Site Feasibility Study identified that offshore habitat recolonization begins within days or weeks. Recovery to conditions similar to those found before disturbance were expected within months and almost certainly within 2 to 5 years based on the recolonization time of days to weeks measured in the study (EPA 2009b:6-21, 6-22). As a result, benthic and epibenthic communities would not be substantially disrupted or disturbed, and impacts would be less than significant.

Fishes in the water column and on or near the ocean floor in the construction area would be temporarily disturbed by underwater construction activities as a result of turbidity. There are no unique habitats within the general vicinity of the construction area that would draw fishes to that area that are not found elsewhere on the PV Shelf. The PV Shelf riser area is a relatively flat soft-bottom habitat; the nearest rocky structure is found approximately 0.9 mile southeast of the riser area at a shallower depth (Sloan pers. comm. 2007). Construction on the PV Shelf would be approximately 5 to 10 acres, or less than 0.1 percent of similar habitat otherwise available to fishes on the PV Shelf at depths of 100 to 400 feet (30 to 120 meters). Therefore, fishes would have other locations to feed and move away from the disturbance, and impacts would be less than significant.

Water column turbidity generated by construction activities is expected to be short term and stay localized. Therefore, impacts on benthic species and the food chain would be less than significant.

Marine Habitat

Grading and placement of ballast rocks on the soft-bottom habitat would result in disturbance and mortality of some organisms as discussed under water quality and sediment quality. Anchor and/or mooring lines could drag on the seafloor, temporarily disturbing soft-bottom habitat. In soft sediments on the PV Shelf, anchors or anchor/mooring lines could create large divots or furrows, disrupting benthic and epibenthic communities. Such disruptions to soft-bottom habitat are common because the PV Shelf riser and diffuser area is located close to the shipping lanes offshore of Los Angeles and Long Beach. However, as previously discussed, the soft-bottom habitat would recolonize relatively quickly (MEC 1988:4-78 through 4-84).

Hard-bottom substrate, including reefs, is more common on the PV Shelf, where it is known to occur at midshelf depths, than on the SP Shelf. As discussed in Alternative 1 (Project) under Impact MAR-4 for the SP Shelf construction area, when this type of habitat is disturbed, recovery depends on the duration of disturbance and the distance from other similar habitat. Therefore, the recolonization of disturbed hard-bottom habitat can result in different community dominants than were found initially in the area. Because anchors and lines could alter low- or high-relief reefs and disrupt the associated communities, substantial disruption of this type of habitat would be considered a significant impact that would be reduced to less than significant through the implementation of MM MAR-4c.

Construction of the riser and diffuser would include placement of ballast rock. This would result in soft-bottom habitat on the PV Shelf being replaced with hard substrate. However, given the small amount of soft-bottom habitat disturbed (approximately 10 acres or less), and the availability of similar habitat throughout the PV Shelf, this is not considered substantial. This soft-bottom habitat would be replaced with hard substrate (i.e., riser, diffuser, and ballast rock), resulting in a shift in fish and invertebrate communities from soft-bottom to reef/hard-substrate and rocky/soft-bottom interface species over a relatively small area. As further discussed in Alternative 1 (Project) under Impact MAR-4, construction of the riser and diffuser would not result in a substantial degradation or disruption of soft-bottom habitat on the SP Shelf, and impacts would be less than significant.

Essential Fish Habitat

A complete EFH assessment was prepared for Alternative 2 (Project) and is attached as Appendix 13-C. The construction of the riser and diffuser would have no effect on the managed species that do not occur on the PV Shelf and minimal effects on those that do. Riser placement, grading, and placement of ballast rock could affect the managed fish/invertebrate species that occur on the PV Shelf through habitat disturbance, turbidity, and suspension of contaminants from sediments, as well as by underwater sound. These effects would be temporary, occurring at intervals lasting approximately 3 years during the in-water construction period, with a general return to baseline conditions between construction activities and following construction, resulting in little disturbance to individuals or to EFH from construction.

There would be a decrease of soft-bottom habitat on the PV Shelf and an increase in hard structure. However, given the small amount of soft-bottom habitat disrupted (approximately 10 acres or less), and the availability of similar habitat throughout the PV Shelf (approximately 19,335 acres between a 33- and 330-foot [10- and 100-meter] depth), this is not considered substantial. Placement of bottom structures would result in less habitat for soft-bottom species, such as recreationally important Dover sole and Pacific sanddab, and more habitat for structure-oriented species, or those that prefer a sand/structure interface. Accordingly, impacts on EFH from riser and diffuser construction would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the PV Shelf diffuser is described in Impact MAR-1. The treated effluent discharged from the new ocean discharge system would have the same physical properties as the discharge from the existing ocean outfalls because the dilution would be the same, if not better. The potential operational impacts associated with the operation of the PV Shelf riser and diffuser would be the same as those described for the SP Shelf diffuser.

Nutrients and Harmful Algal Blooms

As discussed in Section 13.2.1.5, HABs can result in the production of toxins at levels that can affect local biological communities by bioaccumulating in species tissue and cause illness and death in higher food chain animals (Appendix 13-B). However, HABs have not been linked to the operation of ocean outfalls in Southern California, as discussed in Impact MAR-1. Therefore, impacts on local biological communities and habitat would be less than significant.

Water Quality and Sediment Quality

As discussed in Impact MAR-1, operational volumes and effluent quality discharged through the PV Shelf diffuser would be similar to the existing characteristics of the current effluent discharged, and discharge depths and predicted trapping depths would be comparable to the existing ocean outfalls. Furthermore, as discussed in Alternative 1 (Project) under Impact MAR-1 for the SP Shelf, extra fine materials and particles are regularly released from the ocean outfalls. Therefore, particles that settle near ocean outfalls are common features of wastewater disposal systems, as discussed in Impact MAR-1 for operation of the new ocean discharge system on the PV Shelf. However, data from the existing ocean outfalls and studies of the city of San Diego PLWTP outfall show that the chemical composition of the sediment within the vicinity of ocean outfalls and the distribution of particle size from the effluent would not substantially degrade sediment character or quality. Some organic enrichment in the vicinity of the PV Shelf outfall would occur; however, as demonstrated at the city of San Diego outfalls, and in the ongoing monitoring of the existing ocean outfalls, enrichment would be variable and transitory near the diffuser. The legacy contamination in the existing sediment of the PV Shelf would continue to remain in the area where the new diffuser would operate; however, because the discharge of DDT/PCBs into the sewer system ceased in the 1970s, it is unlikely that a new similar discharge on the PV Shelf would result in impacts on local biological communities from an alteration in water and/or sediment quality. Impacts would be less than significant.

Essential Fish Habitat

A complete EFH assessment for Alternative 2 (Project) is included in Appendix 13-C. As discussed in Impacts MAR-1 and MAR-3, operational volumes and effluent quality discharged on the PV Shelf would be similar to existing conditions, and discharge depths and predicted trapping depths are comparable with the existing JWPCP discharge site. The operation of the riser and diffuser would have no effect on EFH on the PV Shelf.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction of the riser and diffuser on the PV Shelf for Alternative 2 (Project) could result in the substantial degradation or disruption of habitat for marine biota or local biological communities. Impacts under CEQA would be significant before mitigation. Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation

Underwater Sound
Implement MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i).

Marine Habitat
Implement MM MAR-4c.

Residual Impacts
Impacts would be less than significant. See the residual impacts discussion for Alternative 1 (Project) under Impacts MAR-3 and MAR-4.

NEPA Impact Determination
Construction of the riser and diffuser for Alternative 2 (Project) could result in the substantial degradation or disruption of habitat for marine biota or local biological communities. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation
Implement MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) and MM MAR-4c.

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact MAR-5. Would Alternative 2 (Project) interfere with the movement/migration corridors of marine biota?

Riser/Diffuser Area – Palos Verdes Shelf

<u>Construction</u>

CEQA Analysis
As discussed in Section 13.2.1.5 and Appendix 13-A, several marine species migrate through the SCB, including birds, sea turtles, marine mammals, and fishes. The impacts on these species would be the same as those described for the SP Shelf. Therefore, the analysis on migration under Alternative 2 (Project) would be the same as Alternative 1 (Project); however, the timing associated with the pile driving would likely occur in the spring of 2018. Implementation of MM MAR-5a to MM MAR-5i

(same as MM MAR-3a to MM MAR-3i) would reduce impacts on any whale migrating in the area to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the PV Shelf diffuser is described in Impact MAR-1. Impacts on movement and migration of marine species as a result of operations under Alternative 2 (Project) would be the same as for Alternative 1 (Project). Operation of the PV Shelf diffuser is not expected to impede or disrupt the movement or migration of any marine species. Therefore, the operation of the new ocean discharge system would not interfere with the movement or migration corridors of marine biota, and impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the PV Shelf for Alternative 2 (Project) could interfere with the movement/migration corridors of marine biota. Impacts under CEQA would be significant before mitigation. Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation

Vessel Collisions

Implement MM MAR-5a through MM MAR-5c (same as MM MAR-3a through MM MAR-3c).

Entanglement

Implement MM MAR-5d through MM MAR-5g (same as MM MAR-3d through MM MAR-3g).

Underwater Sound

Implement MM MAR-5h and MM MAR-5i (same as MM MAR-3h and MM MAR-3i).

Residual Impacts

Residual impacts would be less than significant. See the residual impacts discussion for Alternative 1 (Project) under Impact MAR-3.

NEPA Impact Determination

Construction of the riser and diffuser on the PV Shelf for Alternative 2 (Project) could interfere with the movement/migration corridors of marine biota. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation
Implement MM MAR-5a through MM MAR-5i (same as MM MAR-3a through MM MAR-3i).

Residual Impacts
Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact MAR-6. Would Alternative 2 (Project) adversely affect public health?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
Impact MAR-6 addresses the operation of the new ocean discharge system on the PV Shelf; therefore, construction is not analyzed for this threshold.

Operation

CEQA Analysis
As discussed in Alternative 1 (Project) under Impact MAR-6 for the SP Shelf diffuser operation, the JWPCP has been extensively modified over the years to improve the effluent quality discharged into the Pacific Ocean. Meeting the receiving water quality objectives of the California Ocean Plan and NPDES permit is a fundamental component of the overall ocean discharge system diffuser selection and evaluation process for the PV Shelf. The JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) stated that the following objectives should be considered in the outfall design:

- Satisfy or exceed existing permit requirements
- Assure no significant effects to other regional discharges
- Improve the receiving water quality – no deterioration of receiving water quality
- Maintain a submerged plume – no increase in surfacing of the effluent

As discussed in Impact MAR-1, the proposed PV Shelf diffuser is being designed to meet the receiving water standards of the California Ocean Plan, as well as the requirements of the JWPCP's existing RWQCB WDR order and NPDES permit. With compliance with these standards and requirements, there would be no adverse effect on the public using beaches or the ocean for recreational or commercial fishing purposes associated with the release of effluent at the PV Shelf. Furthermore, the discharge of treated effluent would occur at a depth of 175 feet approximately three miles of the coast of Southern California. People would have no direct or indirect contact with the effluent plume at this depth and distance and thus adverse effects on public health would not occur. Therefore, impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Operation of Alternative 2 (Project) would not adversely affect public health. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Operation of Alternative 2 (Project) would not adversely affect public health. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact MAR-7. Would Alternative 2 (Project) impair beneficial uses designated in the California Ocean Plan?

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
Construction impacts on designated beneficial uses on the PV Shelf would be similar to those described for the SP Shelf. Therefore, the implementation of MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i) and MM MAR-7j (same as MM MAR-4c) would reduce impacts to less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis
Operation of the PV Shelf diffuser is described in Impact MAR-1. Limitations and requirements of the existing NPDES permit protect the marine environment and the beneficial uses of ocean waters. Because the current JWPCP discharge meets NPDES requirements and operational characteristics would be comparable to the existing ocean outfalls, it is unlikely that relocating the discharge on the PV Shelf would impair beneficial uses designated in the California Ocean Plan. The offshore designated beneficial uses are the same for the PV Shelf as for the SP Shelf. Operational conditions resulting in impacts on designated beneficial uses under Alternative 2 (Project) would be the same as for Alternative 1 (Project). No operational impacts on offshore beneficial uses would occur or impacts would be less than significant as summarized in Table 13-16.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the riser and diffuser on the PV Shelf and on the existing ocean outfalls for Alternative 2 (Project) would impair beneficial uses designated in the California Ocean Plan. Impacts under CEQA would be significant before mitigation. Operation of Alternative 2 (Project) would result in less than significant impacts.

Mitigation

Vessel Collisions

Implement MM MAR-7a through MM MAR-7c (same as MM MAR-3a through MM MAR-3c).

Entanglement

Implement MM MAR-7d through MM MAR-7g (same as MM MAR-3d through MM MAR-3g).

Underwater Sound

Implement MM MAR-7h and MM MAR-7i (same as MM MAR-3h and MM MAR-3i).

Marine Habitat

Implement MM MAR-7j (same as MM MAR-4c).

Removal of Protected Species

Implement MM MAR-7k (same as MM MAR-3j).

Residual Impacts

Residual impacts would be less than significant. See the residual impacts discussion for Alternative 1 (Project) under Impact MAR-3.

NEPA Impact Determination

Construction of the riser and diffuser on the PV Shelf and on the existing ocean outfalls for Alternative 2 (Project) would impair beneficial uses designated in the California Ocean Plan. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 1 (Project) would result in less than significant impacts.

Mitigation

Implement MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i) and MM MAR-7j (same as MM MAR-4c).

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

13.4.4.3 Impact Summary – Alternative 2

Impacts on the marine environment for Alternative 2 are summarized in Table 13-20. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Alternative 2 (Program), which is the same as Alternative 1 (Program), does not include marine elements and has no potential to have an impact on the marine environment; therefore, an Impact Summary – Alternative 2 (Program) table is not included.

Table 13-20. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact MAR-1. Would Alternative 2 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	MM MAR-1a. During riser and diffuser construction, analyses of contaminant concentrations (i.e., metals, dichlorodiphenyltrichloroethane [DDT], polychlorinated biphenyls [PCBs], polycyclic aromatic hydrocarbons [PAHs]) in waters near the dredging operations will be required if the contaminant levels in the dredged sediments are known to be elevated and represent a potential risk to beneficial uses. Monitoring data will be used to demonstrate that water quality limits specified in applicable state and federal permits are not exceeded. Corrective or adaptive actions would be implemented if the monitoring data indicate that water quality conditions outside the mixing zone are above the permit-specified limits. MM MAR-1b. Prepare and implement a contaminated sediment management plan that is consistent with practices outlined in the Los Angeles Regional Contaminated Sediment Task Force long-term management strategy if contaminant levels in the dredged sediments are known to be elevated and represent a potential risk. At a minimum, the plan will include site-specific best management plans at the immediate work site to reduce the potential area of exposure to contaminated sediments.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-1a and MM MAR-1b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 13-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-2. Would Alternative 2 (Project) substantially degrade marine sediment quality or character?				
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 13-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact MAR-3. Would Alternative 2 (Project) result in the substantial loss of individuals or the reduction of existing habitat, of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	*Vessel Collisions* MM MAR-3a. Prepare and implement a collision protection plan to address sensitive and protected species. All construction personnel and boat operators will receive protected species training. The training will include review of the plan as well as identification of animals, species, and habitats potentially present in the project area. MM MAR-3b. Restrict tugs, tugs with barges under tow, and large work vessels to speeds of 12 knots (14 miles per hour [mph]) or less at all times. Maneuverable single hull vessels such as crew or supply boats may proceed at speeds of 20 knots (23 mph) or less under most conditions, but will reduce speed to 12 knots or less when whales or sea turtles are reported in the project area. MM MAR-3c. Immediately report all vessel collisions with marine mammals or sea turtles to the National Marine Fisheries Service. *Entanglement* MM MAR-3d. Limit the deployment of any material that has the potential to entangle marine mammals or sea turtles (e.g., anchor lines, cables, rope, other construction debris) to only as long as necessary. MM MAR-3e. Remove as much slack as possible from any potentially entangling material to the point of not jeopardizing construction operations. MM MAR-3f. Position temporary mooring buoys with heavy steel cables or chains to minimize potential entanglements. MM MAR-3g. In the event that a marine mammal or sea turtle becomes entangled, immediately seek guidance from the National Marine Fisheries Service for safe disentanglement options.	CEQA Less Than Significant Impact During Construction

Table 13-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			Underwater Sound MM MAR-3h. Implement a "soft start" method for all pile driving by operating the hammer at less than full capacity (i.e., approximately 40 to 60 percent energy levels) with no less than a 1-minute interval between each strike for a 5-minute period on initial driving for the day, or after a delay of 15 minutes between strikes. MM MAR-3i. Prepare and implement a pile driving management plan. The plan will require that a National Marine Fisheries Service–approved observer be stationed on the work platform or work vessel to monitor the presence of sensitive marine species in the construction area on all days when pile driving is taking place. The observer will survey the project vicinity before pile driving is started and give approval before such work begins. The observer will continue to advise the construction crew throughout the day to modify or stop pile driving if a sensitive or protected species travels within injury distances.	
	NEPA Significant Impact During Construction	Direct	MM MAR-3a through MM MAR-3i	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	*Removal of Protected Species (Black Abalone)* MM MAR-3j. Within 90 days prior to initiation of the rehabilitation work, survey the existing ocean outfall pipelines for black abalone at depths between the 15- and 55-foot isobaths in areas potentially affected by the work. The survey team will include divers/biologists experienced in locating abalone. If black abalone are determined to be present, consult with the National Marine Fisheries Service to develop a black abalone transplantation plan that includes the identification of a suitable nearby transplant location, temporary holding and transport methods, and reporting requirements.	CEQA Less Than Significant Impact During Construction

Table 13-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			Implementation of the plan will occur no more than 30 days preceding the in-water rehabilitation activities and will be conducted by qualified divers/biologists.	
	NEPA Significant Impact During Construction	Direct	MM MAR-3j	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-4. Would Alternative 2 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	*Underwater Sound* MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) *Marine Habitat* MM MAR-4c. Prepare and implement an anchoring plan prior to in-water construction activities in accordance with the U.S. Army Corps of Engineers' permitting requirements. The plan will identify deployment methods for anchors, lines, cables, and moorings to minimize damage to hard-bottom substrate.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) MM MAR-4c	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 13-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact MAR-5. Would Alternative 2 (Project) interfere with the movement/migration corridors of marine biota?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	*Vessel Collisions* MM MAR-5a through MM MAR-5c (same as MM MAR-3a through MM MAR-3c) *Entanglement* MM MAR-5d through MM MAR-5g (same as MM MAR-3d through MM MAR-3g) *Underwater Sound* MM MAR-5h and MM MAR-5i (same as MM MAR-3h and MAR-3i)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-5a through MM MAR-5i (same as MM MAR-3a through MM MAR-3i)	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-6. Would Alternative 2 (Project) adversely affect public health?				
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 13-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact MAR-7. Would Alternative 2 (Project) impair beneficial uses designated in the California Ocean Plan?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	*Vessel Collisions* MM MAR-7a through MM MAR-7c (same as MM MAR-3a through MM MAR-3c) *Entanglement* MM MAR-7d through MM MAR-7g (same as MM MAR-3d through MM MAR-3g) *Underwater Sound* MM MAR-7h and MM MAR-7i (same as MM MAR-3h and MM MAR 3i) *Marine Habitat* MM MAR-7j (same as MM MAR-4c)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i) MM MAR-7j (same as MM MAR-4c)	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	*Removal of Protected Species* MM MAR-7k (same as MM MAR-3j)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-7k (same as MM MAR-3j)	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

13.4.5 Alternative 3

13.4.5.1 Program

Alternative 3 (Program) does not include marine elements and, therefore, has no potential to have an impact on the marine environment.

13.4.5.2 Project

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as for Alternative 2 (Project). The impacts for the existing ocean outfalls would be the same as for Alternative 1 (Project).

13.4.5.3 Impact Summary – Alternative 3

Impacts on the marine environment for Alternative 3 are summarized in Table 13-21. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Alternative 3 (Program), which is the same as Alternative 1 (Program), does not include marine elements and has no potential to have an impact on the marine environment; therefore, an Impact Summary – Alternative 3 (Program) table is not included.

Table 13-21. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact MAR-1. Would Alternative 3 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	MM MAR-1a. During riser and diffuser construction, analyses of contaminant concentrations (i.e., metals, dichlorodiphenyltrichloroethane [DDT], polychlorinated biphenyls [PCBs], polycyclic aromatic hydrocarbons [PAHs]) in waters near the dredging operations will be required if the contaminant levels in the dredged sediments are known to be elevated and represent a potential risk to beneficial uses. Monitoring data will be used to demonstrate that water quality limits specified in applicable state and federal permits are not exceeded. Corrective or adaptive actions would be implemented if the monitoring data indicate that water quality conditions outside the mixing zone are above the permit-specified limits. MM MAR-1b. Prepare and implement a contaminated sediment management plan that is consistent with practices outlined in the Los Angeles Regional Contaminated Sediment Task Force long-term management strategy if contaminant levels in the dredged sediments are known to be elevated and represent a potential risk. At a minimum, the plan will include site-specific best management plans at the immediate work site to reduce the potential area of exposure to contaminated sediments.	CEQA Less Than Significant Impact During Construction

Table 13-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Significant Impact During Construction	Direct	MM MAR-1a and MM MAR-1b	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-2. Would Alternative 3 (Project) substantially degrade marine sediment quality or character?				
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 13-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact MAR-3. Would Alternative 3 (Project) result in the substantial loss of individuals or the reduction of existing habitat, of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	*Vessel Collisions* MM MAR-3a. Prepare and implement a collision protection plan to address sensitive and protected species. All construction personnel and boat operators will receive protected species training. The training will include review of the plan as well as identification of animals, species, and habitats potentially present in the project area. MM MAR-3b. Restrict tugs, tugs with barges under tow, and large work vessels to speeds of 12 knots (14 miles per hour [mph]) or less at all times. Maneuverable single hull vessels such as crew or supply boats may proceed at speeds of 20 knots (23 mph) or less under most conditions, but will reduce speed to 12 knots or less when whales or sea turtles are reported in the project area. MM MAR-3c. Immediately report all vessel collisions with marine mammals or sea turtles to the National Marine Fisheries Service. *Entanglement* MM MAR-3d. Limit the deployment of any material that has the potential to entangle marine mammals or sea turtles (e.g., anchor lines, cables, rope, other construction debris) to only as long as necessary. MM MAR-3e. Remove as much slack as possible from any potentially entangling material to the point of not jeopardizing construction operations. MM MAR-3f. Position temporary mooring buoys with heavy steel cables or chains to minimize potential entanglements. MM MAR-3g. In the event that a marine mammal or sea turtle becomes entangled, immediately seek guidance from the National Marine Fisheries Service for safe disentanglement options.	CEQA Less Than Significant Impact During Construction

Table 13-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			Underwater Sound MM MAR-3h. Implement a "soft start" method for all pile driving by operating the hammer at less than full capacity (i.e., approximately 40 to 60 percent energy levels) with no less than a 1-minute interval between each strike for a 5-minute period on initial driving for the day, or after a delay of 15 minutes between strikes. MM MAR-3i. Prepare and implement a pile driving management plan. The plan will require that a National Marine Fisheries Service–approved observer be stationed on the work platform or work vessel to monitor the presence of sensitive marine species in the construction area on all days when pile driving is taking place. The observer will survey the project vicinity before pile driving is started and give approval before such work begins. The observer will continue to advise the construction crew throughout the day to modify or stop pile driving if a sensitive or protected species travels within injury distances.	
	NEPA Significant Impact During Construction	Direct	MM MAR-3a through MM MAR-3i	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	*Removal of Protected Species (Black Abalone)* MM MAR-3j. Within 90 days prior to initiation of the rehabilitation work, survey the existing ocean outfall pipelines for black abalone at depths between the 15- and 55-foot isobaths in areas potentially affected by the work. The survey team will include divers/biologists experienced in locating abalone. If black abalone are determined to be present, consult with the National Marine Fisheries Service to develop a black abalone transplantation plan that includes the identification of a suitable nearby transplant location, temporary holding and transport methods, and reporting requirements.	CEQA Less Than Significant Impact During Construction

Table 13-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			Implementation of the plan will occur no more than 30 days preceding the in-water rehabilitation activities and will be conducted by qualified divers/biologists.	
	NEPA Significant Impact During Construction	Direct	MM MAR-3j	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-4. Would Alternative 3 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	*Underwater Sound* MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) *Marine Habitat* MM MAR-4c. Prepare and implement an anchoring plan prior to in-water construction activities in accordance with the U.S. Army Corps of Engineers' permitting requirements. The plan will identify deployment methods for anchors, lines, cables, and moorings to minimize damage to hard-bottom substrate.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) MM MAR-4c	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 13-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact MAR-5. Would Alternative 3 (Project) interfere with the movement/migration corridors of marine biota?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	*Vessel Collisions* MM MAR-5a through MM MAR-5c (same as MM MAR-3a through MM MAR-3c) *Entanglement* MM MAR-5d through MM MAR-5g (same as MM MAR-3d through MM MAR-3g) *Underwater Sound* MM MAR-5h and MM MAR-5i (same as MM MAR-3h and MAR-3i)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-5a through MM MAR-5i (same as MM MAR-3a through MM MAR-3i)	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-6. Would Alternative 3 (Project) adversely affect public health?				
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 13-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact MAR-7. Would Alternative 3 (Project) impair beneficial uses designated in the California Ocean Plan?				
Riser/Diffuser Area				
PV Shelf	CEQA Significant Impact During Construction	N/A	*Vessel Collisions* MM MAR-7a through MM MAR-7c (same as MM MAR-3a through MM MAR-3c) *Entanglement* MM MAR-7d through MM MAR-7g (same as MM MAR-3d through MM MAR-3g) *Underwater Sound* MM MAR-7h and MM MAR-7i (same as MM MAR-3h and MM MAR 3i) *Marine Habitat* MM MAR-7j (same as MM MAR-4c)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i) MM MAR-7j (same as MM MAR-4c)	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	*Removal of Protected Species* MM MAR-7k (same as MM MAR-3j)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-7k (same as MM MAR-3j)	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

13.4.6 Alternative 4 (Recommended Alternative)

13.4.6.1 Program

Alternative 4 (Program) does not include marine elements and, therefore, has no potential to have an impact on the marine environment.

13.4.6.2 Project

The construction impacts for the rehabilitation of the existing ocean outfalls for Alternative 4 (Project) would be the same as for Alternative 1 (Project). Operational impacts would be the same as baseline conditions; therefore, there would be no operational impacts for the existing ocean outfalls under Alternative 4 (Project). The shaft sites have not been discussed in Alternatives 1, 2, or 3 because they are located outside of the marine environment and would not affect marine resources; however, the Royal Palms shaft site is assessed in this section because of its applicability to Impact MAR-7.

Impact MAR-7. Would Alternative 4 (Project) impair beneficial uses designated in the California Ocean Plan?

Shaft Site – Royal Palms

Construction

CEQA Analysis

Construction activities at the Royal Palms shaft site would occur for approximately 2 years. This shaft site would primarily operate during daytime hours; however, limited nighttime construction may occur during the connection of the onshore tunnel to the existing manifold structure. Safety lights would be left on when no nighttime work is occurring and full lights would be used during the limited period of nighttime work. None of the construction activities would occur on the beach. All construction activities would be subject to the analysis and mitigation measures identified in Chapters 6 and 11.

Construction activities could impact Royal Palms Beach and the nearshore and offshore areas during grunion spawning. As discussed in Alternative 1 (Project) under Impact MAR-7, California grunion are unique in their utilization of beaches throughout Southern California for spawning and depositing eggs. Use of any particular beach by grunion for spawning during any particular run cannot be predicted, but spawning is known to occur at Royal Palms Beach in spring and summer months. Typically, construction would cease during the nighttime hours, with the exception of the limited period when it may occur. If grunion were spawning during a period of nighttime construction, lighting could affect their spawning ability. However, implementation of MM MAR-7l (same as MM AES-5b) would reduce this impact to less than significant. Therefore, construction would not affect the beneficial use designation of fish spawning after mitigation.

Although construction at the Royal Palms shaft site would not occur on the beach itself, construction activities could make non-contact recreational activities less attractive at this site. Recreational boats, kayaks, or other non-contact water recreation would be temporarily barred from using the ocean in the immediate vicinity of the construction barges and other equipment. However, there is nothing unique or specific about this site that the temporary closure of this area would prevent the public from experiencing. The remaining coastline and nearshore of Southern California would remain available to these types of recreationists during the 9-month temporary construction period. Furthermore, as discussed in Chapter 17, impacts on recreation at the Royal Palms shaft site would be less than significant. Therefore, construction at the Royal Palms shaft site would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With

respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
Once the new onshore tunnel is connected to the existing manifold, the parking lot at Royal Palms Beach would be returned to its existing condition. Therefore, the operation of the shaft site at Royal Palms Beach would not have an impact on any designated beneficial uses.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination
Construction at the Royal Palms shaft site and on the existing ocean outfalls for Alternative 4 (Project) would impair beneficial uses designated in the California Ocean Plan. Impacts under CEQA would be significant before mitigation. Operation of Alternative 4 (Project) would result in no impacts.

Mitigation
Implement MM MAR-7k (same as MM MAR-3j).

MM MAR-7l (same as MM AES-5b). Lights will be installed at the lowest practicable height, and the lowest practicable wattage will be used. Lights will be screened and directed downward, away from the night sky, to the highest degree possible. The number of nighttime lights will be minimized to the highest degree possible.

Residual Impacts
See the residual impacts discussion for Impact MAR-3 under Alternative 1 (Project) for MM MAR-7k (same as MM MAR-3j). Impacts on grunion spawning at White Points Beach due to nighttime construction lighting at the Royal Palms shaft site would be minimized with implementation of MM MAR-7l (same as MM AES-5b). Residual impacts would be less than significant.

NEPA Impact Determination
Construction at the Royal Palms shaft site and on the existing ocean outfalls for Alternative 4 (Project) would impair beneficial uses designated in the California Ocean Plan. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6). Operation of Alternative 4 (Project) would result in no impacts.

Mitigation
Implement MM MAR-7k (same as MM MAR-3j) and MM MAR-7l (same as MM AES-5b).

Residual Impacts
Impacts would be less than significant, as described under the CEQA impact determination.

13.4.6.3 Impact Summary – Alternative 4

Impacts on the marine environment for Alternative 4 are summarized in Table 13-22. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Alternative 4 (Program), which is the same as Alternative 1 (Program), does not include marine elements and has no potential to have an impact on the marine environment; therefore, an Impact Summary – Alternative 4 (Program) table is not included.

Table 13-22. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact MAR-1. Would Alternative 4 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?				
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact MAR-2. Would Alternative 4 (Project) substantially degrade marine sediment quality or character?				
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact MAR-3. Would Alternative 4 (Project) result in the substantial loss of individuals or the reduction of existing habitat, of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?				
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	*Removal of Protected Species (Black Abalone)* MM MAR-3j. Within 90 days prior to initiation of the rehabilitation work, survey the existing ocean outfall pipelines for black abalone at depths between the 15- and 55-foot isobaths in areas potentially affected by the work. The survey team will include divers/biologists experienced in locating abalone. If black abalone are determined to be present, consult with the National Marine Fisheries Service to develop a black abalone transplantation plan that includes the identification of a suitable nearby transplant location,	CEQA Less Than Significant Impact During Construction

Table 13-22 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			temporary holding and transport methods, and reporting requirements. Implementation of the plan will occur no more than 30 days preceding the in-water rehabilitation activities and will be conducted by qualified divers/biologists.	
	NEPA Significant Impact During Construction	Direct	MM MAR-3j	NEPA Less Than Significant Impact During Construction
Impact MAR-4. Would Alternative 4 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?				
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact MAR-5. Would Alternative 4 (Project) interfere with the movement/migration corridors of marine biota?				
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact MAR-6. Would Alternative 4 (Project) adversely affect public health?				
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Impact MAR-7. Would Alternative 4 (Project) impair beneficial uses designated in the California Ocean Plan?				
Shaft Site				
Royal Palms	CEQA Significant Impact During Construction	N/A	MM MAR-7l (same as MM AES-5b). Lights will be installed at the lowest practicable height, and the lowest practicable wattage will be used. Lights will be screened and directed downward, away from the night sky, to the highest degree possible. The number of nighttime lights will be minimized to the highest degree possible.	CEQA Less Than Significant Impact During Construction

Table 13-22 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Significant Impact During Construction	Indirect	MM MAR-7l (same as MM AES-5b)	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Significant Impact During Construction	N/A	*Removal of Protected Species* MM MAR-7k (same as MM MAR-3j)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Direct	MM MAR-7k (same as MM MAR-3j)	NEPA Less Than Significant Impact During Construction

13.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an environmental impact report must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

13.4.7.1 Program

Alternative 5 (Program) does not include marine elements and, therefore, has no potential to have an impact on the marine environment.

13.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, including the Wilmington Drain or Dominguez Channel, as described in Section 3.4.1.5.

The Wilmington Drain is a flood control structure extending from Interstate 110 to the north side of Pacific Coast Highway. South of Pacific Coast Highway, flow from the drain would enter the riparian woodland of Machado Lake (also known as Harbor Lake) in Ken Malloy Harbor Regional Park and ultimately would be discharged into the Los Angeles Harbor. The release of secondary treated effluent would be considered a violation of the JWPCP discharge permit and, therefore, would affect the beneficial uses of the Wilmington Drain, Machado Lake, the Ken Malloy Regional Park, and the Los Angeles Harbor. The city of Los Angeles has undertaken a number of upstream water quality improvement projects, including the Machado Lake Water Quality Improvement and Rehabilitation and the Wilmington Drain Rehabilitation projects (Port of Los Angeles and Port of Long Beach 2009). Emergency discharge into the watershed would likely result in violations of Los Angeles Harbor Bacteria Total Maximum Daily Load (TMDL), Machado Lake Nutrients TMDL, Los Angeles/Long Beach Harbor Toxic Pollutants (encompassing multiple TMDLs), and the Los Angeles County Municipal Separate Storm Sewer Systems Permit.

The Wilmington Drain has the capacity to handle a discharge from the JWPCP during normal flow or dry-weather flow events. However, during a storm event, the combined stormflow and discharge from the JWPCP could exceed the capacity of the Wilmington Drain. If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the JWPCP could overflow and untreated wastewater could enter various water courses via adjacent stormdrains. Any sewer overflow of untreated wastewater would be a violation of the JWPCP's NPDES permit and the SWRCB's Sanitary Sewer Overflow WDR and could affect the beneficial uses and/or violate the TMDLs of the Dominguez Channel, Los Angeles River, Wilmington Drain, Machado Lake, Long Beach Harbor, and Los Angeles Harbor. In addition to regulatory exceedances, the emergency discharge of JWPCP secondary effluent or a sewer overflow of untreated wastewater would result in detrimental impacts on the water quality and marine communities of the Los Angeles and Long Beach Harbor complex. Either discharge would result in increased turbidity and nutrients in the water column, as well as increased bacterial concentrations in the harbor. Increased turbidity, particularly in summer during the tern nesting season, could result in decreased foraging efficiency for sensitive plunge-diving bird species such as California least tern and California brown pelican. Turbidity could reduce light available to subtidal and intertidal alga species living on riprap, bulkheads, and other hard structures in the harbor as well as to eelgrass, a subtidal, soft-bottom species that provides habitat at several locations within the port. Suspended solids from the effluent could clog gills and feeding mechanisms of local benthic, epibenthic, and sessile organisms, including mussels and barnacles in subtidal and intertidal communities.

An emergency discharge of secondary effluent or a sewer overflow of untreated wastewater into the relatively shallow harbor would increase the amount of nutrients available to the phytoplankton population within the photic zone. This could stimulate a red tide algal bloom, which would further increase turbidity as well as affect local water quality. Water quality impacts could include very high DO concentrations near surface and very low DO values near bottom (potentially low enough to negatively affect benthic species) as well as local changes in the pH of the water column. Depending on the plankton species, red tides could also result in HABs, which, as described in Alternative 1 (Project), could lead to impacts on seabird species (including California brown pelican), sea lions, and other marine mammals and humans.

Bacterial contamination associated with untreated wastewater could result in the closure of the Cabrillo Beach area for human use such as swimming and other water contact activities, while fishing activities in the harbor could also be restricted following the discharge.

Complete flushing of the harbor is estimated at 90 tidal cycles, or 47 days (Maloney and Chan 1974:5–6). Although impacts associated with the release of secondary effluent or a sewer overflow of untreated

wastewater would diminish with time prior to the full tidal exchange in the harbor. It is unlikely that an emergency discharge into the Wilmington Drain or a sewer overflow would be captured and treated subsequently. Therefore, the impact to the marine environment and its dependent species around the Los Angeles and Long Beach Harbors would be significant and unavoidable. There is no feasible mitigation that would reduce this impact.

Therefore, impacts would remain significant and unavoidable.

13.4.7.3 Impact Summary – Alternative 5

Alternative 5 (Program), which is the same as Alternative 1 (Program) excluding process optimization, does not include marine elements and has no potential to have an impact on the marine environment. Significant impacts on the marine environment for Alternative 5 (Project) are summarized in Table 13-23.

Table 13-23. Impact Summary – Alternative 5 (Project)

Project Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact MAR-1. Would Alternative 5 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact MAR-2. Would Alternative 5 (Project) substantially degrade marine sediment quality or character?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact MAR-3. Would Alternative 5 (Project) result in the substantial loss of individuals or the reduction of existing habitat, of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact MAR-4. Would Alternative 5 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact MAR-6. Would Alternative 5 (Project) adversely affect public health?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact MAR-7. Would Alternative 5 (Project) impair beneficial uses designated in the California Ocean Plan?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation

13.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required

for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Section 3.4.1.5 and 13.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

13.4.8.1 Program

The program elements are beyond the NEPA scope of analysis. Furthermore, the program does not include marine elements and, therefore, has no potential to have an impact on the marine environment.

13.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

13.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Significant impacts for Alternative 6 would be the same as summarized in Table 13-23 for Alternative 5 (Project).

13.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on the marine environment resulting from the construction and/or operation of project elements is provided in Table 13-24. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 13-24. Comparison of Significant Impacts and Mitigation for Marine Environment (Marine Hydrology, Water Quality, Biological Resources, Noise, and Public Health) for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 1 (Project)			
Impact MAR-1. Would Alternative 1 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?			
Riser and Diffuser Area – SP Shelf	CEQA Significant Impact During Construction	MM MAR-1a. During riser and diffuser construction, analyses of contaminant concentrations (i.e., metals, dichlorodiphenyltrichloroethane [DDT], polychlorinated biphenyls [PCBs], polycyclic aromatic hydrocarbons [PAHs]) in waters near the dredging operations will be required if the contaminant levels in the dredged sediments are known to be elevated and represent a potential risk to beneficial uses.	CEQA Less Than Significant Impact During Construction

Table 13-24 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
		Monitoring data will be used to demonstrate that water quality limits specified in applicable state and federal permits are not exceeded. Corrective or adaptive actions would be implemented if the monitoring data indicate that water quality conditions outside the mixing zone are above the permit-specified limits. MM MAR-1b. Prepare and implement a contaminated sediment management plan that is consistent with practices outlined in the Los Angeles Regional Contaminated Sediment Task Force long-term management strategy if contaminant levels in the dredged sediments are known to be elevated and represent a potential risk. At a minimum, the plan will include site-specific best management practices at the immediate work site to reduce the potential area of exposure to contaminated sediments.	
	NEPA Significant Impact (Direct) During Construction	MM MAR-1a and MM MAR-1b	NEPA Less Than Significant Impact During Construction
Impact MAR-3. Would Alternative 1 (Project) result in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?			
Riser and Diffuser Area – SP Shelf	CEQA Significant Impact During Construction	*Vessel Collisions* MM MAR-3a. Prepare and implement a collision protection plan to address sensitive and protected species. All construction personnel and boat operators will receive protected species training. The training will include review of the plan as well as identification of animals, species, and habitats potentially present in the project area. MM MAR-3b. Restrict tugs, tugs with barges under tow, and large work vessels to speeds of 12 knots (14 miles per hour [mph]) or less at all times. Maneuverable single hull vessels such as crew or supply boats may proceed at speeds of 20 knots (23 mph) or less under most conditions, but will reduce speed to 12 knots or less when whales or sea turtles are reported in the project area. MM MAR-3c. Immediately report all vessel collisions with marine mammals or sea turtles to the National Marine Fisheries Service. *Entanglement* MM MAR-3d. Limit the deployment of any material that has the potential to entangle marine mammals or sea turtles (e.g., anchor lines, cables, rope, other construction debris) to only as long as necessary. MM MAR-3e. Remove as much slack as possible from any potentially entangling material to the point of not jeopardizing construction operations. MM MAR-3f. Position temporary mooring buoys with heavy steel cables or chains to minimize potential entanglements.	CEQA Less Than Significant Impact During Construction

Table 13-24 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
		MM MAR-3g. In the event that a marine mammal or sea turtle becomes entangled, immediately seek guidance from the National Marine Fisheries Service for safe disentanglement options. *Underwater Sound* MM MAR-3h. Implement a "soft start" method for all pile driving by operating the hammer at less than full capacity (i.e., approximately 40 to 60 percent energy levels) with no less than a 1-minute interval between each strike for a 5-minute period on initial driving for the day, or after a delay of 15 minutes between strikes. MM MAR-3i. Prepare and implement a pile driving management plan. The plan will require that a National Marine Fisheries Service–approved observer be stationed on the work platform or work vessel to monitor the presence of sensitive marine species in the construction area on all days when pile driving is taking place. The observer will survey the project vicinity before pile driving is started and give approval before such work begins. The observer will continue to advise the construction crew throughout the day to modify or stop pile driving if a sensitive or protected species travels within injury distances.	
	NEPA Significant Impact (Direct) During Construction	MM MAR-3a through MM MAR-3i	NEPA Less Than Significant Impact During Construction
Riser and Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	*Removal of Protected Species (Black Abalone)* MM MAR-3j. Within 90 days prior to initiation of the rehabilitation work, survey the existing ocean outfall pipelines for black abalone at depths between the 15- and 55-foot isobaths in areas potentially affected by the work. The survey team will include divers/biologists experienced in locating abalone. If black abalone are determined to be present, consult with the National Marine Fisheries Service to develop a black abalone transplantation plan that includes the identification of a suitable nearby transplant location, temporary holding and transport methods, and reporting requirements. Implementation of the plan will occur no more than 30 days preceding the in-water rehabilitation activities and will be conducted by qualified divers/biologists.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-3j	NEPA Less Than Significant Impact During Construction
Impact MAR-4. Would Alternative 1 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?			
Riser and Diffuser Area – SP Shelf	CEQA Significant Impact During Construction	*Underwater Sound* MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) *Marine Habitat* MM MAR-4c. Prepare and implement an anchoring plan prior to in-water construction activities in accordance with the U.S. Army Corps of Engineers' permitting requirements. The plan will identify deployment methods for anchors, lines, cables, and moorings to minimize damage to hard-bottom substrate.	CEQA Less Than Significant Impact During Construction

Table 13-24 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
	NEPA Significant Impact (Direct) During Construction	MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) MM MAR-4c	NEPA Less Than Significant Impact During Construction
Impact MAR-5. Would Alternative 1 (Project) interfere with the movement/migration corridors of marine biota?			
Riser and Diffuser Area – SP Shelf	CEQA Significant Impact During Construction	*Vessel Collisions* MM MAR-5a through MM MAR-5c (same as MM MAR-3a through MM MAR-3c) *Entanglement* MM MAR-5d through MM MAR-5g (same as MM MAR-3d through MM MAR-3g) *Underwater Sound* MM MAR-5h and MM MAR-5i (same as MM MAR-3h and MAR-3i)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-5a through MM MAR-5i (same as MM MAR-3a through MM MAR-3i)	NEPA Less Than Significant Impact During Construction
Impact MAR-7. Would Alternative 1 (Project) impair beneficial uses designated in the California Ocean Plan?			
Riser and Diffuser Area – SP Shelf	CEQA Significant Impact During Construction	*Vessel Collisions* MM MAR-7a through MM MAR-7c (same as MM MAR-3a through MM MAR-3c) *Entanglement* MM MAR-7d through MM MAR-7g (same as MM MAR-3d through MM MAR-3g) *Underwater Sound* MM MAR-7h and MM MAR-7i (same as MM MAR-3h and MM MAR 3i) *Marine Habitat* MM MAR-7j (same as MM MAR-4c)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i) MM MAR-7j (same as MM MAR-4c)	NEPA Less Than Significant Impact During Construction
Riser and Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	*Removal of Protected Species* MM MAR-7k (same as MM MAR-3j)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-7k (same as MM MAR-3j)	NEPA Less Than Significant Impact During Construction

Table 13-24 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 2 (Project)			
Impact MAR-1. Would Alternative 2 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?			
Riser and Diffuser Area – PV Shelf	CEQA Significant Impact During Construction	MM MAR-1a and MM MAR 1b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-1a and MM MAR-1b	NEPA Less Than Significant Impact During Construction
Impact MAR-3. Would Alternative 2 (Project) result in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?			
Riser and Diffuser Area – PV Shelf	CEQA Significant Impact During Construction	MM MAR-3a through MM MAR-3i	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-3a through MM MAR-3i	NEPA Less Than Significant Impact During Construction
Riser and Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	MM MAR-3j	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-3j	NEPA Less Than Significant Impact During Construction
Impact MAR-4. Would Alternative 2 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?			
Riser and Diffuser Area – PV Shelf	CEQA Significant Impact During Construction	MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) MM MAR-4c	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) MM MAR-4c	NEPA Less Than Significant Impact During Construction
Impact MAR-5. Would Alternative 2 (Project) interfere with the movement/migration corridors of marine biota?			
Riser and Diffuser Area – PV Shelf	CEQA Significant Impact During Construction	MM MAR-5a through MM MAR-5i (same as MM MAR-3a through MM MAR-3i)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-5a through MM MAR-5i (same as MM MAR-3a through MM MAR-3i)	NEPA Less Than Significant Impact During Construction
Impact MAR-7. Would Alternative 2 (Project) impair beneficial uses designated in the California Ocean Plan?			
Riser and Diffuser Area – PV Shelf	CEQA Significant Impact During Construction	MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i) MM MAR-7j (same as MM MAR-4c)	CEQA Less Than Significant Impact During Construction

Table 13-24 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
	NEPA Significant Impact (Direct) During Construction	MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i) MM MAR-7j (same as MM MAR-4c)	NEPA Less Than Significant Impact During Construction
Riser and Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	MM MAR-7k (same as MM MAR-3j)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-7k (same as MM MAR-3j)	NEPA Less Than Significant Impact During Construction
Alternative 3 (Project)			
Impact MAR-1. Would Alternative 3 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?			
Riser and Diffuser Area – PV Shelf	CEQA Significant Impact During Construction	MM MAR-1a and MM MAR 1b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-1a and MM MAR-1b	NEPA Less Than Significant Impact During Construction
Impact MAR-3. Would Alternative 3 (Project) result in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?			
Riser and Diffuser Area – PV Shelf	CEQA Significant Impact During Construction	MM MAR-3a through MM MAR-3i	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-3a through MM MAR-3i	NEPA Less Than Significant Impact During Construction
Riser and Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	MM MAR-3j	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-3j	NEPA Less Than Significant Impact During Construction
Impact MAR-4. Would Alternative 3 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?			
Riser and Diffuser Area – PV Shelf	CEQA Significant Impact During Construction	MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) MM MAR-4c	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-4a and MM MAR-4b (same as MM MAR-3h and MM MAR-3i) MM MAR-4c	NEPA Less Than Significant Impact During Construction

Table 13-24 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact MAR-5. Would Alternative 3 (Project) interfere with the movement/migration corridors of marine biota?			
Riser and Diffuser Area – PV Shelf	CEQA Significant Impact During Construction	MM MAR-5a through MM MAR-5i (same as MM MAR-3a through MM MAR-3i)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-5a through MM MAR-5i (same as MM MAR-3a through MM MAR-3i)	NEPA Less Than Significant Impact During Construction
Impact MAR-7. Would Alternative 3 (Project) impair beneficial uses designated in the California Ocean Plan?			
Riser and Diffuser Area – PV Shelf	CEQA Significant Impact During Construction	MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i) MM MAR-7j (same as MM MAR-4c)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-7a through MM MAR-7i (same as MM MAR-3a through MM MAR-3i) MM MAR-7j (same as MM MAR-4c)	NEPA Less Than Significant Impact During Construction
Riser and Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	MM MAR-7k (same as MM MAR-3j)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-7k (same as MM MAR-3j)	NEPA Less Than Significant Impact During Construction
Alternative 4			
Impact MAR-3. Would Alternative 4 (Project) result in the substantial loss of individuals or the reduction of existing habitat of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?			
Riser and Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	MM MAR-3j	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-3j	NEPA Less Than Significant Impact During Construction
Impact MAR-7. Would Alternative 4(Project) impair beneficial uses designated in the California Ocean Plan?			
Shaft Site – Royal Palms	CEQA Significant Impact During Construction	MM MAR-7l (same as MM AES-5b). Lights will be installed at the lowest practicable height, and the lowest practicable wattage will be used. Lights will be screened and directed downward, away from the night sky, to the highest degree possible. The number of nighttime lights will be minimized to the highest degree possible.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM MAR-7l (same as MM AES-5b)	NEPA Less Than Significant Impact During Construction

Table 13-24 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Riser and Diffuser Area – Existing Ocean Outfalls	CEQA Significant Impact During Construction	MM MAR-7k (same as MM MAR-3j)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Direct) During Construction	MM MAR-7k (same as MM MAR-3j)	NEPA Less Than Significant Impact During Construction
Alternative 5			
Impact MAR-1. Would Alternative 5 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact MAR-2. Would Alternative 5 (Project) substantially degrade marine sediment quality or character?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact MAR-3. Would Alternative 5 (Project) result in the substantial loss of individuals or the reduction of existing habitat, of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact MAR-4. Would Alternative 5 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact MAR-6. Would Alternative 5 (Project) adversely affect public health?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Impact MAR-7. Would Alternative 5 (Project) impair beneficial uses designated in the California Ocean Plan?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Alternative 6			
Impact MAR-1. Would Alternative 6 (Project) create pollution, contamination, or nuisance, as defined in Section 13050 of the CWC; or cause regulatory standards to be violated, as defined in the applicable NPDES permit(s) or State Water Quality Control Plan for ocean waters for concentration and emissions of discharge?			
Emergency Discharge	NEPA Significant Impact During Operation	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Operation

Table 13-24 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact MAR-2. Would Alternative 6 (Project) substantially degrade marine sediment quality or character?			
Emergency Discharge	NEPA Significant Impact During Operation	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Operation
Impact MAR-3. Would Alternative 6 (Project) result in the substantial loss of individuals or the reduction of existing habitat, of a state- or federally listed endangered, threatened, rare, protected, candidate, or sensitive plant or animal species or a species of special concern?			
Emergency Discharge	NEPA Significant Impact During Operation	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Operation
Impact MAR-4. Would Alternative 6 (Project) result in the substantial degradation or disruption of marine habitat or local biological communities?			
Emergency Discharge	NEPA Significant Impact During Operation	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Operation
Impact MAR-6. Would Alternative 6 (Project) adversely affect public health?			
Emergency Discharge	NEPA Significant Impact During Operation	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Operation
Impact MAR-7. Would Alternative 6 (Project) impair beneficial uses designated in the California Ocean Plan?			
Emergency Discharge	NEPA Significant Impact During Operation	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Operation

Chapter 14
NOISE AND VIBRATIONS (TERRESTRIAL)

14.1 Introduction

This chapter describes the existing conditions and regulations applicable to terrestrial noise and vibrations, discusses potential impacts of such noise and vibrations associated with the program and project elements, and determines the significance of impacts. For impacts determined to be potentially significant, mitigation measures are provided, where feasible, to reduce these impacts to less than significant.

Marine noise and vibrations are addressed in Chapter 13. Information on construction- and operations-related noise and vibration sources for the program and project elements was provided by Parsons and the Sanitation Districts of Los Angeles County (Sanitation Districts).

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the noise and vibrations impact analysis for each program element is summarized by alternative in Table 14-1.

Table 14-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	C
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	C,O
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 14-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	C
Biosolids Management	X	X	X	X	X	N/A	O	O
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 14-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 14.4.7 for a discussion of the No-Project Alternative.
[b] See Section 14.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the noise and vibration impact analysis for each project element is summarized by alternative in Table 14-2.

Table 14-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	C
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	C
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	C
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	C
Figueroa/ Western to Royal Palms (onshore)				X	N/A	N/A	C,O	C
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C
JWPCP West			X	X	N/A	N/A	C,O	C
TraPac	X	X			N/A	N/A	C,O	C
LAXT	X	X			N/A	N/A	C,O	C
Southwest Marine	X	X			N/A	N/A	C,O	C
Angels Gate			X		N/A	N/A	C,O	C
Royal Palms				X	N/A	N/A	C,O	C

Table 14-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	See Chapter 13.	
PV Shelf		X	X		N/A	N/A	See Chapter 13.	
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	See Chapter 13.	

[a] See Section 14.4.7 for a discussion of the No-Project Alternative.
[b] See Section 14.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

14.2 Environmental Setting

14.2.1 Noise Fundamentals

14.2.1.1 Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ. Noise is defined as any loud, unexpected, or annoying sound. In the science of acoustics, the fundamental model has a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the source, as well as obstructions or atmospheric factors affecting the propagation path to the receiver, determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

14.2.1.2 Frequency (Hertz)

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or hertz (Hz). A frequency of 250 cycles per second would be referred to as 250 Hz. High frequencies are sometimes more conveniently expressed in kilohertz (thousands of hertz; kHz). The audible frequency range for humans is generally between 20 and 20,000 Hz.

14.2.1.3 Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micropascals (µPa). One µPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100 million µPa. Because of this huge range of values, sound is rarely expressed in terms of µPa. Instead, a logarithmic scale is used to describe sound pressure level in terms of decibels (dB). The threshold of hearing for young people is about 20 µPa, which corresponds to 0 dB.

14.2.1.4 Addition of Decibels

Because decibels are logarithmic units, sound pressure level cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. When two identical sources are producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB, but 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

14.2.1.5 A-Weighted Decibels

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies and in the way it perceives the sound pressure level in that range. In general, people are most sensitive to the frequency range of 1,000 to 8,000 Hz. They perceive sounds within that range better than sounds of the same amplitude at higher or lower frequencies. To approximate the response of the human ear, the sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. An A-weighted sound level (expressed in units of A-weighted decibels [dBA]) can then be computed based on this information. The A-weighting is commonly used for the measurement of environmental and industrial noise, as well as assessing potential hearing damage.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in reference to human response to environmental noise levels. Noise levels for traffic noise reports are normally reported in terms of dBA. Typical A-weighted noise levels for various noise sources are described in Table 14-3.

Table 14-3. Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band
Jet fly-over at 1,000 feet		
	100	
Gas lawn mower at 3 feet		
	90	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower at 100 feet	**70**	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	**60**	
		Large business office
Quiet urban daytime	**50**	Dishwasher, next room

Table 14-3 (Continued)

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Quiet urban nighttime	**40**	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night
	20	
		Broadcast/recording studio
	10	
Lowest threshold of human hearing	**0**	Lowest threshold of human hearing

dBA = A-weighted decibel
Source: Caltrans 1998

14.2.1.6 Human Response to Changes in Noise Levels

As discussed in Section 14.2.1.4, doubling sound energy results in a 3-dB increase in sound. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different from what is measured. Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels when exposed to steady, single-frequency (pure-tone) signals in the mid-frequency (1,000 to 8,000 Hz) range. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB for typical noisy environments. Furthermore, a 10-dB increase is generally perceived as a doubling of loudness. Therefore, doubling sound energy (e.g., doubling the volume of traffic on a highway) would generally be perceived as a detectable but not substantial increase in sound level.

14.2.1.7 Noise Descriptors

Noise in our daily environment fluctuates over time. Various noise descriptors have been developed to describe time-varying noise levels. The following noise descriptors are used in this analysis:

- **Equivalent sound level (L_{eq}).** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level (L_{eq}[h]) is the energy average of A-weighted sound levels occurring during a 1-hour period and is the basis for noise abatement criteria (NAC) used by the California Department of Transportation and the Federal Highway Administration (FHWA).
- **Percentile-exceeded sound level (L_{xx}).** L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time).
- **Maximum sound level (L_{max}).** L_{max} is the highest instantaneous sound level measured during a specified period.
- **Day-night level (L_{dn}).** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring between 10 p.m. and 7 a.m.
- **Community noise equivalent level (CNEL).** Similar to L_{dn}, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to

A-weighted sound levels occurring between 10 p.m. and 7 a.m., and a 5-dB penalty between 7 p.m. and 10 p.m.

14.2.1.8 Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

- **Geometric spreading.** Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (i.e., decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path. Therefore, they can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.
- **Ground absorption.** The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance from the noise source. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface, such as a parking lot or body of water, between the source and the receiver), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees, between the source and the receiver), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance.
- **Atmospheric effects.** Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway because of atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors, such as air temperature, humidity, and turbulence, can also have significant effects.
- **Shielding by natural or human-made features.** A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Barriers are often constructed between a noise source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction.

14.2.2 Groundborne Vibration

This section describes basic concepts related to groundborne vibration. Dynamic construction equipment can create groundborne vibrations that radiate along the surface of and downward into the earth. These surface waves can be felt as groundborne vibration. Vibration can result in effects ranging from the annoyance of people to the damage of structures. Varying geology and distance result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes will decrease with increasing distance from the vibration source.

As vibration waves travel outward from a source, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the peak particle velocity (ppv).

Groundborne vibration can also be expressed in terms of root mean square (RMS) vibration velocity to evaluate human response to vibration levels. RMS is defined as the average of the squared amplitude of the vibration signal. The vibration amplitude is expressed in terms of vibration decibels (VdB), which use a reference level of 1 micro-inch per second. The threshold of perception for most people is around 65 VdB. Vibration levels in the 70- to 80-VdB range are often noticeable but acceptable. Typically, vibration levels must exceed 100 VdB before building damage occurs, except for historic structures, which can have a damage threshold as low as 88 VdB.

The potential for annoyance and physical damage to buildings from vibration is the primary issue associated with groundborne vibration. The human response to continuous groundborne vibration is shown in Table 14-4.

Table 14-4. Human Response to Continuous Vibration From Traffic

Peak Particle Velocity (Inches/Second)	Human Response
0.4–0.6	Unpleasant
0.2	Annoying
0.1	Begins to annoy
0.08	Readily perceptible
0.006–0.019	Threshold of perception

Source: Whiffen and Leonard 1971

Damage potential thresholds for vibration generated by construction activities are shown in Table 14-5.

Table 14-5. Maximum Vibration Levels for Preventing Damage

Type of Situation	Limiting Velocity (ppv in inches/second)	Approximate Vibration Level (VdB)
Historic sites or other critical locations	0.1	88
Residential buildings, plastered walls	0.2–0.3	94–98
Residential buildings in good repair with gypsum board walls	0.4–0.5	100–102
Engineered structures, without plaster	1.0–1.5	108–111

ppv = peak particle velocity
VdB = vibration decibel
Source: American Association of State Highway and Transportation Officials (AASHTO)1990

At higher frequencies, groundborne vibration can be perceived as a noise source. At sufficiently high amplitudes, propagation of vibration waves through the ground can couple with building elements and cause them to vibrate at a frequency that is audible to the human ear. Groundborne noise could result in rattling of windows, walls, or other items coupled to building surfaces. Groundborne vibration levels resulting in groundborne noise are often experienced as a combination of perceptible vibration and low-frequency noise.

Sensitive land uses for groundborne vibration include residences, schools, churches, and hospitals. Outdoor park facilities, such as picnic areas or athletic fields, are not considered to be sensitive to

groundborne noise or vibration. Hospital operating rooms and certain types of industries that use vibration-sensitive equipment are considered highly sensitive to groundborne noise and vibration.

The human response to different levels of groundborne noise and vibration is shown in Table 14-6. Vibration levels with spectral components within the range of human hearing (30 Hz and 60 Hz in the table) would produce the corresponding approximate A-weighted noise levels. Thus, it is possible to experience vibrations as audible noise, even though physical vibrations may not be detected.

Table 14-6. Human Response to Groundborne Noise

Vibration Velocity (VdB)	Low-Frequency Noise Level[a] (dBA)	Mid-Frequency Noise Level[b] (dBA)	Human Response
65	25	40	Approximate threshold of perception for many humans. Low-frequency sound usually inaudible; mid-frequency sound excessive for quiet sleeping areas.
75	35	50	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level annoying. Low-frequency noise acceptable for sleeping areas; mid-frequency noise annoying in most quiet occupied areas.
85	45	60	Vibration acceptable only if there are an infrequent number of events per day. Low-frequency noise annoying for sleeping areas; mid-frequency noise annoying even for infrequent events with institutional land uses such as schools and churches.

[a] Approximate noise level when vibration spectrum peak is near 30 Hz.
[b] Approximate noise level when vibration spectrum peak is near 60 Hz.
VdB = vibration decibel
dBA = A-weighted decibel
Source: FTA 2006

14.2.3 Regional Setting

Automobile, bus, and truck traffic are the major noise sources in the Joint Outfall System (JOS) service area because it is located in the urban portions of southern and eastern Los Angeles County. Air and rail traffic and commercial and industrial activities are also sources of noise in some parts of the JOS service area. Sources of groundborne vibration in the JOS service area typically include trucks and buses operating on surface streets, and freight and passenger train operations.

14.2.4 Program Setting

Conveyance System

Based on population forecasts and flow modeling, it is projected that approximately 33 miles of JOS sewers will require relief between now and the year 2050. The conveyance system is located underground throughout the JOS service area. The conveyance system does not produce audible noise above the ground or detectable groundborne vibrations. The noise setting of the conveyance system is the same as the regional setting.

San Jose Creek Water Reclamation Plant

The San Jose Creek Water Reclamation Plant (SJCWRP) is located behind the Sanitation Districts' Joint Administrative Office, adjacent to both Interstate (I-) 605 and State Route (SR-) 60 in an unincorporated area of Los Angeles County. The main sources of noise in the area are the automobiles, buses, and trucks using these freeways. Sensitive land uses near the SJCWRP include schools to the north, east, and west

and residences in all four directions. No sensitive receptors are located directly adjacent to the SJCWRP, and no complaints have been received concerning noise from this facility.

Pomona Water Reclamation Plant

The Pomona Water Reclamation Plant (POWRP) is located in the city of Pomona approximately 0.5 mile east of SR-57, 0.5 mile west of SR-71, and 1 mile south of I-10. The main sources of noise in the area are the automobiles, buses, and trucks using these freeways. Train noise from the Union Pacific Railroad, which defines the northern border of the POWRP, also contributes to the noise environment in the area. The POWRP is located at the northern base of Elephant Hill, which serves as the plant's southern and western boundary and provides acoustical shielding to areas south and west of the POWRP.

Sensitive land uses near the POWRP include single- and multi-family residences, and elementary schools to the northeast and southeast, each about 0.7 mile from the plant. Land uses directly adjacent to the POWRP consist of industry and offices. No complaints have been received concerning noise from the POWRP.

Los Coyotes Water Reclamation Plant

The Los Coyotes Water Reclamation Plant (LCWRP) is located in the northwest quadrant of SR-91/I-605 interchange in the city of Cerritos. The main sources of noise in the area are the automobiles, buses, and trucks using these freeways.

Sensitive noise receptors near the LCWRP include Cerritos College to the east, Bellflower High School to the northwest, Valley Christian High School to the south, Bellwood Hospital to the southwest, and a church to the south. Single- and multi- family residences and neighborhood parks are located west and east of the LCWRP. No sensitive receptors are located directly adjacent to the LCWRP, and no complaints have been received concerning noise from this facility.

Long Beach Water Reclamation Plant

The Long Beach Water Reclamation Plant (LBWRP) is located in the city of Long Beach near the southeast quadrant of the I-605/East Willow Street interchange in a triangular area enclosed by Coyote Creek to the east, the San Gabriel River to the west, and East Willow Street to the north. The main sources of noise in the area are the automobiles, buses, and trucks using these freeways.

Single- and multi-family residences in the area are located to the east and southwest of the LBWRP. El Dorado Regional Park and Golf Course is located west of the San Gabriel River. Oak Academy Park and the El Dorado Nature Center Park are located to the north of the LBWRP. No sensitive receptors are located directly adjacent to the LBWRP, and no complaints have been received concerning noise from this facility.

Joint Water Pollution Control Plant

The JWPCP is located in the city of Carson at the city's boundary with the community of Wilmington–Harbor City. The western boundary of the JWPCP is directly adjacent to I-110. The Pacific Coast Highway (SR-1) also passes near the plant. The main sources of noise in the area are the automobiles, buses, and trucks using these freeways.

Sensitive receptors near the plant include residences and schools in all directions, Little Company of Mary Women's and Children's Clinic to the west, and Kaiser Permanente Hospital to the southwest. Although pumps, aerators, trucks, and other equipment at the facility generate noise, no adverse effects have been reported from surrounding neighborhoods. No complaints have been received from neighbors or users of other sensitive land uses in the area regarding noise from the JWPCP.

Trucks used for hauling biosolids from the JWPCP to offsite locations enter and leave the plant via Figueroa Street, Sepulveda Boulevard, and I-110. Although these trucks generate noise, there are no residences or other sensitive uses along this route, and no noise complaints have been received from the nearby community. The JWPCP is located directly adjacent to I-110 and major arterials, and the noise environment in the area is dominated by traffic noise. The noise generated by trucks entering and exiting the JWPCP tends to blend with other traffic noise in the area and is not considered a major component of overall traffic noise.

14.2.5 Project Setting

14.2.5.1 Tunnel Alignment

Wilmington to San Pedro Shelf Alignment

The Wilmington to San Pedro Shelf (SP Shelf) alignment would extend south from the JWPCP East shaft site along the roadway alignment of North Wilmington Boulevard in mostly residential areas, at a tunnel crown depth of approximately 100 to 200 feet below ground surface (bgs). The tunnel would continue under the Port of Los Angeles and then offshore into the Pacific Ocean until it reaches the SP Shelf at a tunnel crown depth of approximately 100 to 200 feet bgs or below the seafloor. Because the tunnel alignment would be underground, it does not have an existing noise setting.

Wilmington to Palos Verdes Shelf Alignment

The onshore portion of this tunnel alignment would be the same as the onshore portion of the Wilmington to SP Shelf alignment. The offshore portion of the tunnel would extend from the Port of Los Angeles to the Palos Verdes Shelf (PV Shelf) at a tunnel crown depth of approximately 100 to 250 feet bgs or below the seafloor. Because the tunnel alignment would be underground, it does not have an existing noise setting.

Figueroa/Gaffey to Palos Verdes Shelf Alignment

The Figueroa/Gaffey to PV Shelf alignment would extend south from the JWPCP West shaft site along Figueroa Street and then Gaffey Street in mostly residential areas, at a tunnel crown depth of approximately 70 to 370 feet bgs. The offshore portion of the tunnel would extend from Point Fermin Park to the PV Shelf at a tunnel crown depth of approximately 100 to 250 feet bgs or below the seafloor. Because the tunnel alignment would be underground, it does not have an existing noise setting.

Figueroa/Western to Royal Palms Alignment

The Figueroa/Western to Royal Palms alignment would extend south from the JWPCP West shaft site for a short distance and then would cut west under a golf course and Harbor Lake (also known as Machado Lake). The tunnel alignment would continue under Gaffey Street in mostly commercial and industrial areas, then under West Capitol Drive and Western Avenue in mostly residential areas, to Royal Palms Beach. The onshore tunnel crown depth would range from approximately 70 to 450 feet bgs, except for where the tunnel alignment would connect to the Royal Palms shaft and the existing manifold structure (approximately 30 feet bgs). The manifold structure is connected to the existing ocean outfalls that extend offshore from Royal Palms Beach to the PV Shelf. Because the tunnel alignment would be underground, it does not have an existing noise setting.

Fish Harbor

While the specific location from which the excavated dredged material from construction of the offshore tunnel would be loaded onto barges is still unknown, for this analysis it was assumed that the barges would be loaded at Fish Harbor. Fish Harbor is located in the Port of Los Angeles across Seaside Avenue from the Southwest Marine shaft site. Noise from local traffic, ships, and port activities contribute to the

area's ambient noise environment. The Terminal Island Federal Prison and Fire Station 111 of the City of Los Angeles Fire Department are located southwest of Fish Harbor, and residential neighborhoods are located across the Main Channel, approximately 0.7 mile west of the Southwest Marine shaft site.

Ambient Noise Levels

Long-term monitoring was conducted at the LAXT shaft site (described in Section 14.2.5.2), which is also located within the industrial setting of the Port of Los Angeles and is representative of the noise setting of the Fish Harbor. A full summary of noise monitoring for this project element is provided in Section 14.4.1.

14.2.5.2 Shaft Site

JWPCP East

The JWPCP East shaft site is located in the city of Carson at the southeastern corner of the JWPCP. The shaft site is in an area containing industrial, residential, commercial, school, and church land uses. The site is bound to the north by a railway and JWPCP facilities. South Main Street follows the eastern edge of the site and is lined with industrial warehouses. Commercial development is located northeast and southwest of the Main Street and Lomita Boulevard intersection. Lomita Boulevard follows the southern edge of the site and is lined with residential development. The western edge of the site is also bound by JWPCP facilities. I-110 is approximately 0.5 mile west of the shaft site. Traffic noise from automobiles, buses, and trucks using nearby arterials and I-110 is the main source of noise in the JWPCP area. Occasional trains also contribute to the area's noise environment. Single-family residences across Lomita Boulevard to the south are the closest noise-sensitive receptors to the shaft site.

Ambient Noise Levels

Long-term monitoring characterizes the existing noise setting. Noise monitoring was conducted near the JWPCP East shaft site. A full summary of noise monitoring for this project element is provided in Section 14.4.1.

The noise monitor was located in the backyard of a residence south of West Lomita Boulevard, approximately 100 feet from the edge of pavement. Hourly sound levels ranged from a low of 52.4 dBA L_{eq} (1h) during the 12 a.m. hour to a high of 66.4 dBA L_{eq} (1h) during the 11 a.m. hour. The overall day-night level was 62.4 dB L_{dn}.

JWPCP West

The JWPCP West shaft site is located within the community of Wilmington–Harbor City at the southern boundary of the city of Carson. The northern portion of the shaft site is located in the city of Carson. The southern portion of the shaft site is located in a triangular area enclosed by I-110 to the west, Figueroa Street to the east, and West Lomita Boulevard to the north. The shaft site is directly adjacent to I-110; therefore, traffic noise generated by automobiles, buses, and trucks is the main source of noise in the area.

Single- and multi-family residences are located to the east, south, and west of the shaft site. The JWPCP lies to the north. A recreational area with ball fields is the closest noise-sensitive receptor, located directly east of the shaft site across Figueroa Street.

Ambient Noise Levels

Long-term monitoring was conducted near the JWPCP West shaft site. A full summary of noise monitoring for this project element is provided in Section 14.4.1.

The noise monitor was located next to a ball field in the outdoor recreation area adjacent to the shaft site, approximately 30 feet from the edge of Figueroa Street and 600 feet from I-110. Hourly sound levels ranged from a low of 60.6 dBA L_{eq} (1h) during the 3 a.m. hour to a high of 69.6 dBA L_{eq} (1h) during the 6 p.m. hour. The overall day-night level was 71.5 dB L_{dn}.[1]

TraPac

The Trans Pacific Container Service Corporation (TraPac) shaft site is located in the northernmost portion of the Port of Los Angeles, in a highly industrialized area within the city of Los Angeles. The shaft site is within a freight container stacking yard and is bordered on the east, south, and west by rows of stacked containers. I-110 is approximately 0.3 mile west of the shaft site. The site is bordered on the north by a railway running parallel to Harry Bridges Boulevard and the Harry Bridges Boulevard Buffer, which serves as a park and public open space. The buffer includes a large landscaped berm (approximately 30 feet in height) to protect the park and residences to the north from the noise and activity of the port. Traffic noise generated by automobiles, buses, and trucks is the main source of noise in the area. The railway and port activities also contribute to the area's ambient noise environment.

The nearest noise-sensitive receptors are single- and multi-family residences fronting West C Street, 700 feet north of the shaft site. Other noise-sensitive receptors include the Wilmington Recreation Center, 0.25 mile northeast of the shaft site, which contains outdoor sports courts, and the Hawaiian Avenue Elementary School, 0.25 mile northwest of the site.

Ambient Noise Levels

Long-term monitoring was conducted at the Los Angeles Export Terminal (LAXT) shaft site (described in the following section), which is also located within the industrial setting of the Port of Los Angeles and is representative of the noise setting of the TraPac site. A full summary of noise monitoring for this project element is provided in Section 14.4.1.

LAXT

The LAXT shaft site is located on Terminal Island within the Port of Los Angeles, adjacent to Ferry Street, which is a designated truck transport route. The site is bordered to the north by Fire Station 40 of the Los Angeles Fire Department, and to the east and south by the former Petroleum Coke Storage and Reclaim Facility Site. The Terminal Island Water Reclamation Plant is located west of the shaft site. Pilchard Street and Terminal Way terminate to the east into Ferry Street. Large container stacking yards and rail yards border the shaft site to the south, west, and northeast. The noise environment at the LAXT shaft site is dominated by rail and truck cargo traffic at the port.

The nearest noise-sensitive receptor is the fire station located approximately 150 feet north of the shaft site. The next-nearest noise-sensitive use is a residential neighborhood more than 1 mile away from the shaft site.

Ambient Noise Levels

Long-term monitoring was conducted near the LAXT shaft site. A full summary of noise monitoring for this project element is provided in Section 14.4.1.

The noise monitor was located next to the fire station adjacent to the LAXT shaft site. Hourly sound levels ranged from a low of 48.6 dBA L_{eq} (1h) during the 3 a.m. hour to a high of 62.4 dBA L_{eq} (1h) during the 11 a.m. hour. The overall day-night level was 63.5 dB L_{dn}.[1]

[1] The overall day-night level is a higher number than the hourly level because it uses a different noise metric (L_{dn} instead of L_{eq}) for which penalties are applied to noise levels occurring during nighttime hours. For a detailed description refer to Section 14.2.1.7.

Southwest Marine

The Southwest Marine shaft site is located in the Port of Los Angeles, west of South Seaside Avenue on the vacant Southwest Marine Shipbuilding property adjacent to the Main Channel of Los Angeles Harbor. Noise from local traffic, ships, and port activities contribute to the area's ambient noise environment.

The nearest noise-sensitive receptors are Fire Station 111, which is located across South Seaside Avenue from the shaft site, and the Terminal Island Federal Prison, which is located approximately 200 feet to the south. The prison includes several residential structures and outdoor sports courts and ball fields. The shaft site is 0.3 mile southeast of Ports O'Call Village, which is across the Main Channel in the community of San Pedro. Ports O'Call Village supports outdoor use associated with restaurants, waterfront walkways, and patios. Residential neighborhoods in the San Pedro community are located across the Main Channel approximately 0.7 mile west of the shaft site.

Ambient Noise Levels

Long-term monitoring was conducted at the LAXT shaft site, which is also located within the industrial setting of the Port of Los Angeles and is representative of the noise setting of the Southwest Marine site. A full summary of noise monitoring for this project element is provided in Section 14.4.1.

Angels Gate

The Angels Gate shaft site is located near the Pacific coastline in the community of San Pedro, adjacent to Angels Gate Park. It is located east of South Gaffey Street, north of Point Fermin Park, and east of West Paseo Del Mar/Shepard Street. Traffic noise generated by automobiles, buses, and trucks on local roadways is the main source of noise in the area.

There are noise-sensitive receptors, such as single- and multi-family residences across South Gaffey Street to the east, less than 100 feet from the shaft site. Point Fermin Park is to the south, across Shepard Street. Lookout Point and the Korean Bell of Friendship at Angels Gate Park are located to the north, approximately 80 feet above the shaft site. This terrain edge continues southwest toward West Paseo Del Mar, forming an intervening berm between Joan Milke Flores Park and the shaft site.

Ambient Noise Levels

Long-term monitoring was conducted at the Royal Palms shaft site (described in following section), which is also located within the coastal urban setting in San Pedro adjacent to West Paseo Del Mar and is representative of the noise setting at the Angels Gate shaft site. A full summary of noise monitoring for this project element is provided in Section 14.4.1.

Royal Palms

The Royal Palms shaft site is located adjacent to the Pacific coastline at Royal Palms Beach near White Point Park and White Point County Beach in the community of San Pedro. It sits at the base of a bluff lined by residences along West Paseo Del Mar that have views down into the shaft site. Traffic noise generated by automobiles, buses, and trucks on West Paseo Del Mar above the shaft site is the main source of noise in the area. Natural sounds from ocean waves along the coastline are also present in the ambient noise setting.

The nearest noise-sensitive receptors are single- and multi-family residences that lie to the north, approximately 120 feet from the shaft site. The first row of residences sits on the bluff about 125 feet above the ground elevation of the shaft site.

Ambient Noise Levels

Long-term monitoring was conducted near the Royal Palms shaft site. A full summary of noise monitoring for this project element is provided in Section 14.4.1.

The noise monitor was located at the top of the bluff near the intersection of Western Avenue and West Paseo Del Mar. Hourly sound levels ranged from a low of 57.7 dBA L_{eq} (1h) during the 10 a.m. hour to a high of 60.3 dBA L_{eq} (1h) during the 1 p.m. hour. The overall day-night level was 65.2 dB L_{dn}.[2]

14.2.5.3 Riser/Diffuser Area

The riser and diffuser areas are located on the seafloor of the SP and PV Shelves. The noise setting of the riser and diffuser areas consists of natural sounds associated with the ocean. The noise setting and noise impacts on the marine environment are addressed in Chapter 13.

Pasha Terminal

While the specific location for pre-assembly of the parts and materials for the riser and diffuser is still unknown, for this analysis it was assumed that the riser and diffuser would be preassembled at the Pasha Terminal. Pasha Terminal is located on Mormon Island in the northern portion of the Port of Los Angeles in a highly industrialized area within the city of Los Angeles. I-110 is approximately 1 mile west. Noise from traffic, railway sources, and port activity contribute to the area's noise environment. The nearest noise-sensitive receptors are single- and multi-family residences and hotels that front West C Street about 0.3 mile north in the community of Wilmington–Harbor City.

Ambient Noise Levels

Long-term monitoring was conducted at the LAXT shaft site (previously described), which is also located within the industrial setting of the Port of Los Angeles and is representative of the noise setting of the Pasha Terminal. A full summary of noise monitoring for this project element is provided in Section 14.4.1.

14.3 Regulatory Setting

14.3.1 Federal

14.3.1.1 Noise Control Act of 1972

The Noise Control Act of 1972 (Public Law 92 574) established a requirement that all federal agencies administer their programs to promote an environment free of noise that would jeopardize public health or welfare. The United States (U.S.) Environmental Protection Agency (EPA) was given the responsibility for:

- Providing information to the public regarding identifiable effects of noise on public health and welfare
- Publishing information on the levels of environmental noise that will protect the public health and welfare with an adequate margin of safety
- Coordinating federal research and activities related to noise control

[2] The overall day-night level is a higher number than the hourly level because it uses a different noise metric (L_{dn} instead of L_{eq}) for which penalties are applied to noise levels occurring during nighttime hours. For a detailed description refer to Section 14.2.1.7.

- Establishing federal noise emission standards for selected products distributed in interstate commerce

14.3.1.2 U.S. Environmental Protection Agency

In 1974, in response to the requirements of the federal Noise Control Act, the EPA identified indoor and outdoor noise limits to protect public health and welfare (communication disruption, sleep disturbance, and hearing damage). Outdoor L_{dn} limits of 55 dB and indoor L_{dn} limits of 45 dB are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. Sound-level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour L_{eq} values of 70 dB (both outdoors and indoors).

The Noise Control Act also directed that all federal agencies comply with applicable federal, state, interstate, and local noise control regulations. Although the EPA was given a major role in disseminating information to the public and coordinating federal agencies, each federal agency retains authority to adopt noise regulations pertaining to agency programs. The EPA can, however, require other federal agencies to justify their noise regulations in terms of Noise Control Act policy requirements. Key federal agencies that have adopted noise regulations and standards include:

- **Housing and Urban Development (HUD).** Noise standards for federally funded housing projects.
- **Federal Aviation Administration (FAA).** Noise standards for aircraft noise.
- **Federal Highway Administration (FHWA).** Noise standards for federally funded highway projects.
- **Federal Transit Administration (FTA).** Noise standards for federally funded transit projects.
- **Federal Railroad Administration (FRA)**. Noise standards for federally funded rail projects.

14.3.1.3 Federal Highway Administration

The FHWA has developed methods for evaluating construction noise, which are discussed in the Roadway Noise Construction Model User's Guide (FHWA 2006). The FHWA does not recommend specific noise level criteria for construction activities.

14.3.1.4 Federal Transit Administration

The FTA has developed methods for evaluating construction noise, which are discussed in Transit Noise and Vibration Impact Assessment (FTA 2006). In addition, the FTA (2006) recommends noise criteria for residential uses exposed to construction noise, as summarized in Table 14-7.

Table 14-7. FTA Recommended Construction Noise Criteria for Residential Uses

1-Hour L_{eq} (Day[a])	1-Hour L_{eq} (Night[b])	8-Hour L_{eq} (Day)	8-Hour L_{eq} (Night)	L_{dn} (30-Day Average)
90	80	80	70	75

All values are A-weighted decibels.
[a] 7 a.m.–10 p.m.
[b] 10 p.m.–7 a.m.
L_{eq} = equivalent sound level
L_{dn} = day-night sound level

Although the FTA has established vibration criteria related to rail transit, there are no federal regulations or guidelines for vibration caused by construction tunneling. Human response to vibration and the potential for damage to buildings are discussed in Section 14.2.2.

14.3.2 State

The State of California General Plan Guidelines (Office of Planning and Research 2003) provides noise compatibility guidelines for land use planning; however, these guidelines offer no information on construction noise. The state has also published the Model Community Noise Ordinance (California Office of Noise Control 1977), which provides guidance to cities and counties on how to develop a community noise ordinance. These guidelines include recommended limits on construction noise levels. These are guidelines only and are not enforceable. Construction noise is typically regulated at the local level.

14.3.3 Regional

14.3.3.1 County of Los Angeles General Plan Noise Element

The County of Los Angeles General Plan Noise Element establishes noise-related goals and policies and describes the general noise environment in Los Angeles County. Los Angeles County has also adopted a noise ordinance that recommends maximum expected ambient noise levels for four land use categories:

- **Noise-sensitive areas.** For noise-sensitive areas, the maximum expected ambient noise level is 45 dB anytime.
- **Residential.** For residential land uses, the maximum expected ambient daytime (7 a.m.–10 p.m.) noise level is 50 dB. The maximum expected ambient nighttime (10 p.m.–7 a.m.) noise level is 45 dB.
- **Commercial.** For commercial land uses, the maximum expected ambient daytime noise level is 60 dB. The maximum expected ambient nighttime noise level is 55 dB.
- **Industrial.** For industrial land uses, including JOS facilities, the maximum expected ambient noise level is 70 dB anytime.

If the measured ambient noise level at a specific project location exceeds the expected ambient levels, the measured ambient noise level should be used as the baseline noise level.

14.3.3.2 Los Angeles County General Noise Standards

Exterior noise standards in Los Angeles County are as follows:

- The baseline noise level for a given land use may not be exceeded for more than 30 minutes in any 1-hour period.
- The baseline noise level plus 5 dB may not be exceeded for more than 15 minutes in any 1-hour period.
- The baseline noise level plus 10 dB may not be exceeded for more than 5 minutes in any 1-hour period.

- The baseline noise level plus 15 dB may not be exceeded for more than 1 minute in any 1-hour period.
- The baseline noise level plus 20 dB may not be exceeded for any period of time.

In addition, Los Angeles County has interior noise standards. For all multifamily residential land uses, the allowable interior noise level is 40 dB at night and 45 dB during the day. The allowable interior noise level may not be exceeded for more than 5 minutes in any 1-hour period, and the allowable interior noise level plus 5 dB cannot be exceeded for more than 1 minute in any 1-hour period. The allowable interior noise level plus 10 dB or the maximum measured ambient noise level may not be exceeded for any period of time. If the measured ambient noise level exceeds the allowable interior level, each standard described above may be increased by 5 dB.

14.3.3.3 Los Angeles County Construction Noise Requirements

Los Angeles County has specific restrictions for construction-related noise. The noise ordinance includes maximum noise levels for short- and long-term construction activities. For short-term construction, maximum noise levels from 7 a.m. to 8 p.m., excluding Sundays and holidays are 75 dB for single-family residential land uses, 80 dB for multifamily residential land uses, and 85 dB for semi-residential/ commercial land uses. From 8 p.m. to 7 a.m. daily and all day on Sundays and holidays, maximum noise levels are 60 dB for single-family residential land uses, 65 dB for multifamily residential land uses, and 70 dB for semi-residential/commercial land uses.

For long-term construction, maximum noise levels from 7 a.m. to 8 p.m., excluding Sundays and holidays, are 60 dB for single-family residential land uses, 65 dB for multifamily residential land uses, and 70 dB for semi-residential/commercial land uses. From 8 p.m. to 7 a.m. daily and all day on Sundays and holidays, maximum noise levels are 50 dB for single-family residential land uses, 55 dB for multifamily residential land uses, and 60 dB for semi-residential/commercial land uses.

14.3.4 Local

The program and project elements are subject to different local ordinances and planning standards depending on the applicable jurisdictions. Local regulations are discussed in this section by each program and project element.

San Jose Creek Water Reclamation Plant

The SJCWRP is located in the unincorporated area of Los Angeles County. Therefore, the Los Angeles County General Plan Noise Element and the county noise standards and construction noise requirements discussed in Section 14.3.3 are applicable to this plant. However, the plant is adjacent to the city of South El Monte, which could be affected by noise generated at the SJCWRP. The city of South El Monte standard discussed below is based on a L_{eq} threshold for construction noise, as opposed to the county's L_{max} threshold.

City of South El Monte

The city of South El Monte noise ordinance lists maximum permissible sound levels by zone: low-density residential, multifamily residential or public land use, commercial or commercial/manufacturing, and manufacturing. In specific project locations, if the measured ambient noise level exceeds the maximum permissible sound levels listed below, the measured ambient noise level should be used as the baseline.

For low-density residential zones, the maximum permissible daytime (7 a.m.–10 p.m.) sound level is 55 dB and the maximum permissible nighttime (10 p.m.–7 a.m.) sound level is 45 dB. For multifamily

residential zones, the maximum permissible daytime sound level is 60 dB and the maximum permissible nighttime sound level is 50 dB. For commercial or commercial/manufacturing zones, the maximum permissible sound level is 60 dB in the daytime and 55 dB at night. For manufacturing zones, the maximum permissible sound level is 70 dB anytime.

Exterior noise limits based on the maximum permissible sound levels described above are as follows:

- The maximum permissible sound level for a given zone may not be exceeded for more than 30 minutes in any 1-hour period.
- The maximum sound level plus 5 dB may not be exceeded for more than 15 minutes in any 1-hour period.
- The maximum permissible sound level plus 10 dB may not be exceeded for more than 5 minutes in any 1-hour period.
- The maximum permissible sound level plus 15 dB may not be exceeded for more than 1 minute in any 1-hour period.
- The maximum permissible sound level plus 20 dB may not be exceeded for any period of time.

Additionally, if an offensive noise contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, the exterior noise limits described above should be reduced by 5 dB.

The City of South El Monte General Plan Noise Element serves as an official guide to the city council, planning commission, city departments, businesses, private organizations, and community members concerned with noise pollution in the city. The general plan noise element characterizes noise levels and describes policies applicable to noise issues and includes land use compatibility criteria for noise levels in the city. These criteria describe acceptable community noise equivalent level (CNEL) designations for various land uses. As explained in the general plan's Appendix D (Noise), the CNEL is a weighted-average measurement of daily noise levels. These criteria differ from those set forth in the city's noise ordinance, which are applicable only to brief periods within a single hour. Land use compatibility criteria in South El Monte are as follows:

- For low-density residential land uses, 60 dB is the normally acceptable CNEL.
- For multifamily residential and transient lodging land uses (i.e., motels), 65 dB is the normally acceptable CNEL.
- For schools, libraries, churches, hospitals, nursing homes, playgrounds, and neighborhood parks, 70 dB is the normally acceptable CNEL.
- For office, business commercial, and professional buildings, 70 dB is the normally acceptable CNEL.
- For industrial, manufacturing, utility, and agricultural land uses, 75 dB is the normally acceptable CNEL.

Pomona Water Reclamation Plant

The POWRP is located in the city of Pomona. The city of Pomona standard is based on a L_{eq} threshold for construction noise, as opposed to the county's L_{max} threshold.

City of Pomona

The city of Pomona noise ordinance lists maximum permissible sound levels by zone: low-density residential, multifamily residential, commercial, industrial, and high-traffic corridors. In specific project locations, if the measured ambient noise level exceeds the maximum permissible sound levels listed below, the measured ambient noise level should be used as the baseline.

For single-family residential zones, the allowable exterior daytime (7 a.m.–10 p.m.) sound level is 60 dB and the maximum permissible nighttime (10 p.m.–7 a.m.) sound level is 50 dB. For multifamily residential zones, the maximum permissible daytime sound level is 65 dB and the maximum permissible nighttime sound level is 50 dB. For commercial or commercial/manufacturing zones, the maximum permissible sound level is 65 dB in the daytime and 60 dB at night. For industrial zones and high-traffic corridor zones, the maximum permissible sound level is 70 dB during daytime and nighttime.

Exterior noise limits based on the maximum permissible sound levels described above are as follows:

- The maximum permissible sound level for a given zone may not be exceeded for more than 30 minutes in any 1-hour period.
- The maximum sound level plus 5 dB may not be exceeded for more than 15 minutes in any 1-hour period.
- The maximum permissible sound level plus 10 dB may not be exceeded for more than 5 minutes in any 1-hour period.
- The maximum permissible sound level plus 15 dB may not be exceeded for more than 1 minute in any 1-hour period.
- The maximum permissible sound level plus 20 dB may not be exceeded for any period of time.

Noise and vibration from construction sources are exempt provided that such activities do not take place between the hours of 8 p.m. and 7 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday, or exceed the noise standard of 65 dB plus limits specified above.

Los Coyotes Water Reclamation Plant

The LCWRP is located in the city of Cerritos. The city of Cerritos standard is based on a L_{eq} threshold for construction noise, as opposed to the county's L_{max} threshold.

City of Cerritos

The LCWRP is located in the city of Cerritos. The City of Cerritos General Plan Noise Element establishes policies designed to control noise levels in the city. In addition, the city of Cerritos noise ordinance lists maximum acceptable noise levels applicable within the city limits. These levels are divided based on land use: 50 dB in residential or agricultural areas, 60 dB in commercial areas, and 70 dB in industrial areas. The LCWRP is considered an industrial land use. The ordinance states that no noise will be generated that causes these noise levels to be exceeded by more than 5 dB.

For any repetitive noise or steady, audible tone, 5 dB should be subtracted from the maximum sound-level limit to determine whether a violation of the ordinance has occurred. The following adjustments should be applied to the maximum sound level limit only between 7 a.m. and 7 p.m., except for uses in or near residential areas:

- For any noise occurring for less than 15 minutes per hour, 5 dB should be added to the maximum sound level.

- For any noise occurring for less than 5 minutes per hour, 10 dB should be added to the maximum sound level.
- For any noise occurring for less than 1 minute per hour, 15 dB should be added to the maximum sound level.

Long Beach Water Reclamation Plant

The LBWRP is located in the city of Long Beach. The city of Long Beach standard is based on a L_{eq} threshold for construction noise, as opposed to the county's L_{max} threshold.

City of Long Beach

The city of Long Beach noise ordinance lists maximum permissible sound levels by zone: residential, commercial, and industrial. In specific project locations, if the measured ambient noise level exceeds the maximum permissible sound levels listed below, the measured ambient noise level should be used as the baseline.

For residential zones, the maximum permissible daytime (7 a.m.–10 p.m.) sound level is 50 dB and the maximum permissible nighttime (10 p.m.–7 a.m.) sound level is 45 dB. For commercial zones, the maximum permissible daytime sound level is 60 dB and the maximum permissible nighttime sound level is 55 dB. For industrial zones, the maximum permissible sound level is 65 dB, day or night.

Exterior noise limits based on the maximum permissible sound levels described above are as follows:

- The maximum permissible sound level for a given zone may not be exceeded for more than 30 minutes in any 1-hour period.
- The maximum sound level plus 5 dB may not be exceeded for more than 15 minutes in any 1-hour period.
- The maximum permissible sound level plus 10 dB may not be exceeded for more than 5 minutes in any 1-hour period.
- The maximum permissible sound level plus 15 dB may not be exceeded for more than 1 minute in any 1-hour period.
- The maximum permissible sound level plus 20 dB or the maximum measured ambient may not be exceeded for any period of time.

Additionally, if an offensive noise contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, the exterior noise limits described above should be reduced by 5 dB.

Shaft Sites – JWPCP East and JWPCP West

The JWPCP is located along the southern boundary of the city of Carson and is adjacent to the city of Los Angeles' community of Wilmington–Harbor City. Because communities in both jurisdictions could be affected by noise generated at the JWPCP, noise guidelines for both jurisdictions are applicable to this analysis.

City of Carson

The Los Angeles County ordinance for construction noise was adopted and amended by the city of Carson to use different definitions for durations of short- and long-term construction.

The city of Carson's noise ordinance identifies several types of noise-producing activities that are considered unacceptable within city limits. The noise ordinance states that operation of any electric motor or engine, machine, or mechanical device between the hours of 11 p.m. and 7 a.m. is unacceptable unless the device is enclosed in a sound-insulated structure that prevents noise from being plainly audible 50 feet from the structure or within 10 feet of any residence.

The noise ordinance restricts the operation of certain equipment, including a pile driver, pneumatic hammer, derrick, hoist, or "other appliance" that produces loud or unusual noise, to between 7 a.m. and 6 p.m. Furthermore, the erection, demolition, alteration, construction, or repair of any building is restricted to between 7 a.m. and 6 p.m., except in emergency situations.

The City of Carson General Plan Noise Element background report lists expected ambient noise levels for single-family residential, multifamily residential, commercial, and industrial land uses. The noise element states that raising the ambient noise level of any area by 5 dB would result in a "slightly noisy" sound level.

For single-family residential land uses in the city of Carson, the expected ambient daytime (7 a.m.–7 p.m.) noise level is 55 dB. The expected ambient early evening (7 p.m.–10 p.m.) noise level is 50 dB, and the expected ambient nighttime (10 p.m.–7 a.m.) noise level is 45 dB. For multifamily residential land uses in the city of Carson, the expected ambient daytime noise level is 55 dB. The expected ambient evening and nighttime noise level is 50 dB. For commercial land uses in Carson, the expected ambient daytime noise level is 60 dB. The expected ambient evening and nighttime noise level for commercial land uses is 55 dB. For industrial land uses in the city of Carson (such as the JWPCP), the expected ambient noise level is 70 dB anytime.

City of Los Angeles

The City of Los Angeles General Plan Noise Element lists expected ambient noise levels for various land uses. These land use categories are not as clearly defined as those described for the city of Carson, but they translate approximately to residential, commercial, industrial, and heavy industrial.

The expected ambient noise level in residential areas during the day (7 a.m.–10 p.m.) is 50 dB and during the night (10 p.m.–7 a.m.) is 40 dB. The expected ambient noise level in commercial areas during the day is 60 dB and during the night is 55 dB.

The expected ambient noise level in industrial areas is 65 dB at all times. The expected ambient noise level in heavy industrial areas is 70 dB at all times.

The city of Los Angeles has adopted a noise ordinance that prevents an intruding noise from increasing the ambient noise level of an area by more than 5 dB. When applied to specific project locations, if the measured ambient noise level exceeds the expected ambient noise level, the measured ambient noise level should be used as the baseline (Jones & Stokes 1984).

The city also requires that adjustments be applied to noise level measurements to determine whether a violation of the ordinance has occurred. For any noise with an audible fundamental frequency of 200 Hz, 5 dB should be added to the noise level measurement. For any repeated, impulsive noise, 5 dB should be added to the noise level measurement. For any noise occurring for less than 15 minutes in any consecutive l-hour period between 7 a.m. and 10 p.m., 5 dB should be subtracted from the noise level measurement.

Shaft Sites – TraPac, LAXT, Southwest Marine, Angels Gate, and Royal Palms

Local noise standards specified in the city of Los Angeles code are applicable to shaft sites located in the Port of Los Angeles and the community of San Pedro.

Pasha Terminal and Fish Harbor

Local noise standards specified in the city of Los Angeles code are applicable to the Pasha Terminal and Fish Harbor, located in the Port of Los Angeles.

14.4 Environmental Impacts and Mitigation Measures

14.4.1 Methodology and Assumptions

14.4.1.1 Construction Noise

The assessment of potential construction noise levels was based on methodology developed by the FTA (2006). Noise levels produced by commonly used construction equipment are summarized in Table 14-8. Individual types of construction equipment are expected to generate maximum noise levels ranging from 80 to 85 dBA at a distance of 50 feet. The construction noise level at a given receiver depends on the type of construction activity, the noise level generated by that activity, and the distance and shielding between the activity and noise-sensitive receivers.

Table 14-8. Construction Equipment Noise Emission Levels

Equipment	Quantity	Typical Noise Level (dBA) 50 Feet From Source
Grader	1	85[a]
Bulldozers	1	85[a]
Truck	2	84[b]
Loader	1	85[a]
Air Compressor	1	81[a]
Backhoe	1	80[a]
Pneumatic Tool	1	85[a]
Excavator	2	85[b]
Auger Drill Rig (for drilled piles)	1	85[a]

[a] Source: FTA 2006
[b] Source: Thalheimer 2000
dBA = A-weighted decibel

Utilization factors for construction noise are used in the analysis when the applicable construction noise ordinance uses a noise standard based on L_{eq} noise exposure. The L_{eq} noise standard accounts for the energy-average of noise over a specified interval (usually 1 hour), so a utilization factor represents the amount of time a type of equipment is used during the interval. Jurisdictions such as the county of Los Angeles use an L_{max} standard, which represents a loudest-case scenario that assumes all equipment is operating simultaneously.

14.4.1.2 Traffic Noise Modeling

Existing traffic noise levels at sensitive receptors surrounding the JWPCP were evaluated through use of the FHWA Traffic Noise Model Lookup program (TNM). This model estimates average noise levels at fixed distances from the roadway centerline based on estimated traffic volumes for automobiles and medium- and heavy-duty trucks, vehicle speeds, and a designated noise drop-off rate. Shielding effects

from topographical features and buildings are not accounted for in the model. The model was programmed to produce a conservative, worst-hour estimate of traffic-generated noise levels due to heavy truck and increased commuter trips associated with construction at the JWPCP shaft sites (project) and with biosolids management at the JWPCP (program).

14.4.1.3 Noise Monitoring of Ambient Noise Levels

Where applicable to local standards, results of noise monitoring conducted at project elements are used in the analysis to describe the ambient noise environment in the area.

14.4.1.4 Groundborne Vibration and Noise From Tunneling Operations

Analysis of groundborne vibration and noise from tunneling operations is based on methodology used in the Integrated Resources Plan (IRP) Draft Environmental Impact Report (EIR) (City of Los Angeles 2005). Tunneling operations for the IRP required the use of tunnel boring machines (TBMs) and haul trains (or locomotives), which shuttle materials, equipment, and construction workers back and forth in the tunnel between the TBM and the shaft. The tunneling operations for the Clearwater Program are similar.

The analysis is based on vibration measurements of TBM and haul train operations during tunnel construction of the Metropolitan Transportation Authority Red Line in the city of Los Angeles. The data from that study were supplemented by vibration data from the city of Los Angeles' North Outfall Replacement Sewer (NORS) project. The IRP vibration study determined that vibration data from the Red Line and NORS projects would be analogous to construction vibration levels from TBM and haul train operations for the IRP. However, it should be noted that the impact estimates for the analysis of this project element are conservative, because tunnel depths studied in the IRP vibration analysis were generally shallower.

Currently, there are no federal regulations or California Environmental Quality Act (CEQA) guidelines for vibration resulting from tunnel construction. The thresholds used for this project were specified in the IRP and were adapted from thresholds used in other tunneling projects in the city of Los Angeles (City of Los Angeles 2005), and the Federal Transit Administration Guidance Manual (FTA 2006). The impact threshold for groundborne vibrations from TBM operations is 80 VdB (based on a crest factor of 4), which is equivalent to a ppv of 0.04 inch per second. The impact threshold for groundborne vibrations from locomotive operation is 75 VdB (based on a crest factor of 5), which is equivalent to a ppv of 0.025 inch per second. The impact threshold for groundborne noise levels from haul trains is 45 dBA, which is equivalent to a ppv of approximately 0.01 inch per second. Due to variations in geology and building types, actual vibration and noise levels could vary.

It should be noted that vibration from TBM operations occurs at low frequencies, whereas groundborne noise typically is caused by higher frequency vibration. Therefore, audible groundborne noise from TBM operation is not anticipated at sensitive receptors located above the tunnel and will not be further discussed. Based on data presented in the IRP study, maximum groundborne vibration levels of 0.02 inch per second ppv were measured up to a minimum 20-foot horizontal distance from the tunnel centerline during TBM operations for an average tunnel depth of 50 feet, which is less than the TBM vibration impact threshold of 0.04 inch per second. Therefore, groundborne vibrations from the TBM for the Clearwater Program are generally anticipated to be below the threshold for significant impact.

Consequently, for this project, the haul trains would be the only likely source of any perceivable groundborne noise and vibration. Groundborne noise from moving haul trains would be generated from

the wheel-rail interface and could propagate through the ground to nearby buildings at a frequency within the range of human hearing and manifest as audible noise inside structures.

Based on data presented in the IRP study, maximum ppv levels of 0.025 inch per second were measured up to a minimum 35-foot horizontal distance from the tunnel centerline during haul train operations, based on an average tunnel depth of 50 feet, which is at the haul train vibration threshold of 0.025 inch per second, and higher than the groundborne noise threshold of 0.01 inch per second at horizontal distances of less than 100 feet.

At the average tunnel depth of 50 feet used in the IRP analysis, a horizontal distance of 100 feet from tunnel centerline translates to a diagonal distance of approximately 110 feet from the tunnel base. Groundborne noise impacts for this project element were derived from the IRP analysis; therefore, the conditions under which receivers may be affected by groundborne noise from haul trains occur where receivers are less than 110 diagonal feet away from the tunnel base. This concept is translated into horizontal distance to the groundborne noise threshold level as a function of tunnel depth as shown on Figure 14-1. The vertical, diagonal, and horizontal distance relationships between the tunnel base, ground surface, and tunnel centerline are shown on Figure 14-2. In areas where the depth of the tunnel base is greater than 110 feet, groundborne noise levels would be below the impact threshold.

14.4.1.5 Baseline

CEQA Baseline

The CEQA baseline is the ambient noise level in a given program and project element location. Baseline noise levels vary greatly depending on the extent of urban development and proximity to transportation corridors. Ambient urban noise levels are typically in the range of 55 to 65 dB (see Table 14-3). Ambient noise levels near major highways can be as high as 75 dB.

Noise monitoring was conducted for the Clearwater Program to characterize ambient noise levels near shaft sites, which are anticipated to be the most active construction areas. Monitoring was conducted over 24-hour periods at four positions, using a Rion Model NL-21 Type 2 sound level meter (serial numbers 773232 and 776887). The purpose of the monitoring was to describe variations in sound levels throughout the day, rather than absolute sound levels at a specific receptor of concern. The long-term sound level data were collected over the 24-hour periods at each site from Tuesday, February 16, to Thursday, February 18, 2010. Locations of noise monitoring are shown on Figure 14-3. Noise monitoring was conducted at the following sites:

- **LT-1.** Long-term monitoring site LT-1 was located in the backyard of a residence west of Frigate Avenue, and set back about 100 feet south of West Lomita Boulevard. The microphone was placed approximately 3 feet above the surrounding ground. The purpose of the measurement at this site was to characterize ambient noise levels in the neighborhood near the JWPCP further away from I-110, where arterial traffic is the dominant noise source.
- **LT-2.** Long-term monitoring site LT-2 was located next to Fire Station 40 within the Port of Los Angeles, and set back about 160 feet east of Ferry Street. The microphone was placed approximately 3 feet above the surrounding ground. The purpose of the measurement at this site was to characterize typical ambient noise levels in the Port of Los Angeles, including the LAXT, TraPac, and Southwest Marine shaft sites.
- **LT-3.** Long-term monitoring site LT-3 was located at a baseball field at the Wilmington Athletic Complex approximately 40 feet east of Figueroa Street. The microphone was placed approximately 3 feet above the surrounding ground. The purpose of the measurement at this site

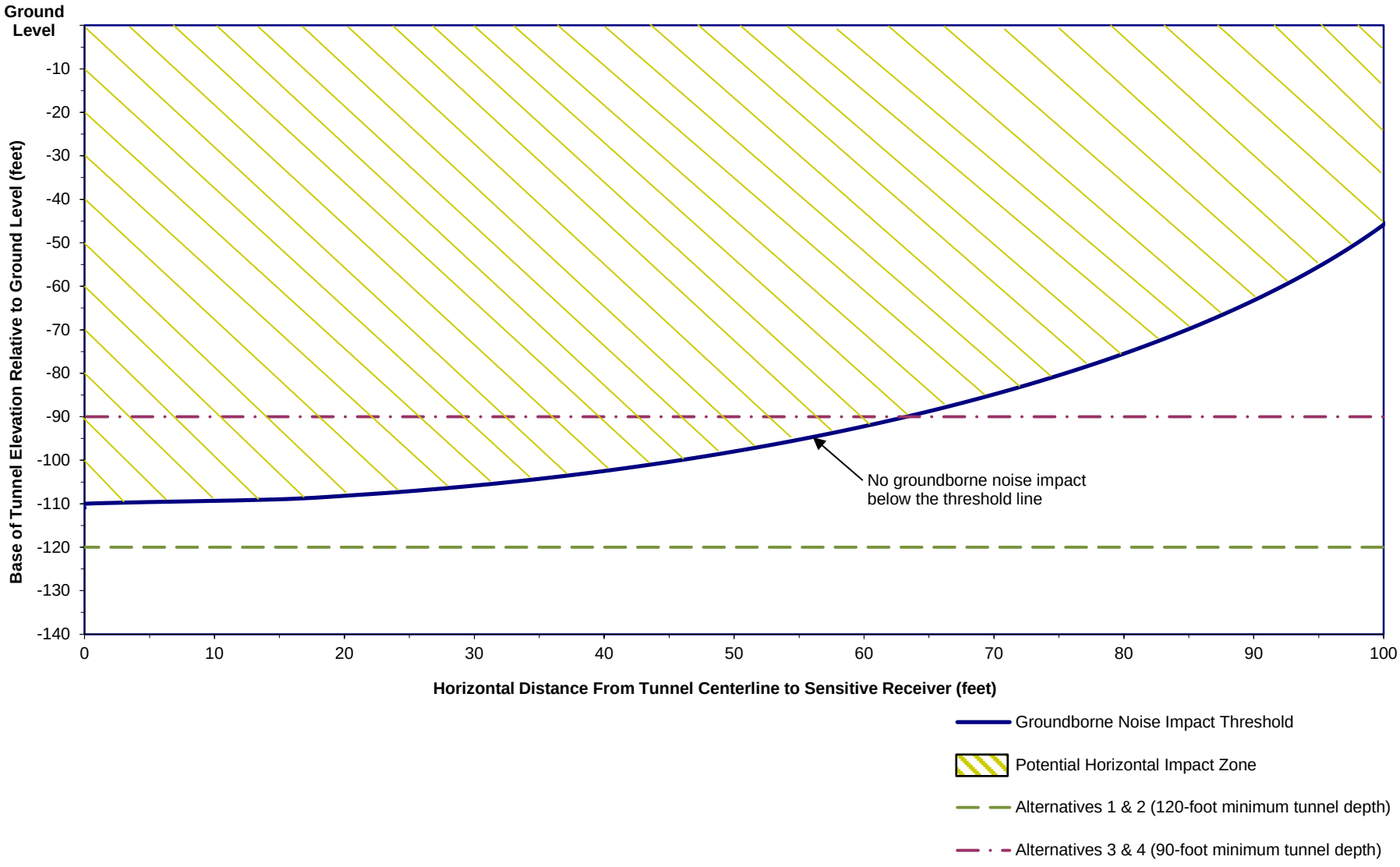


FIGURE 14-1

CLEARWATER Program

Groundborne Noise Impact Threshold as a Function of Tunnel Depth

Source: Sanitation Districts of Los Angeles County 2011

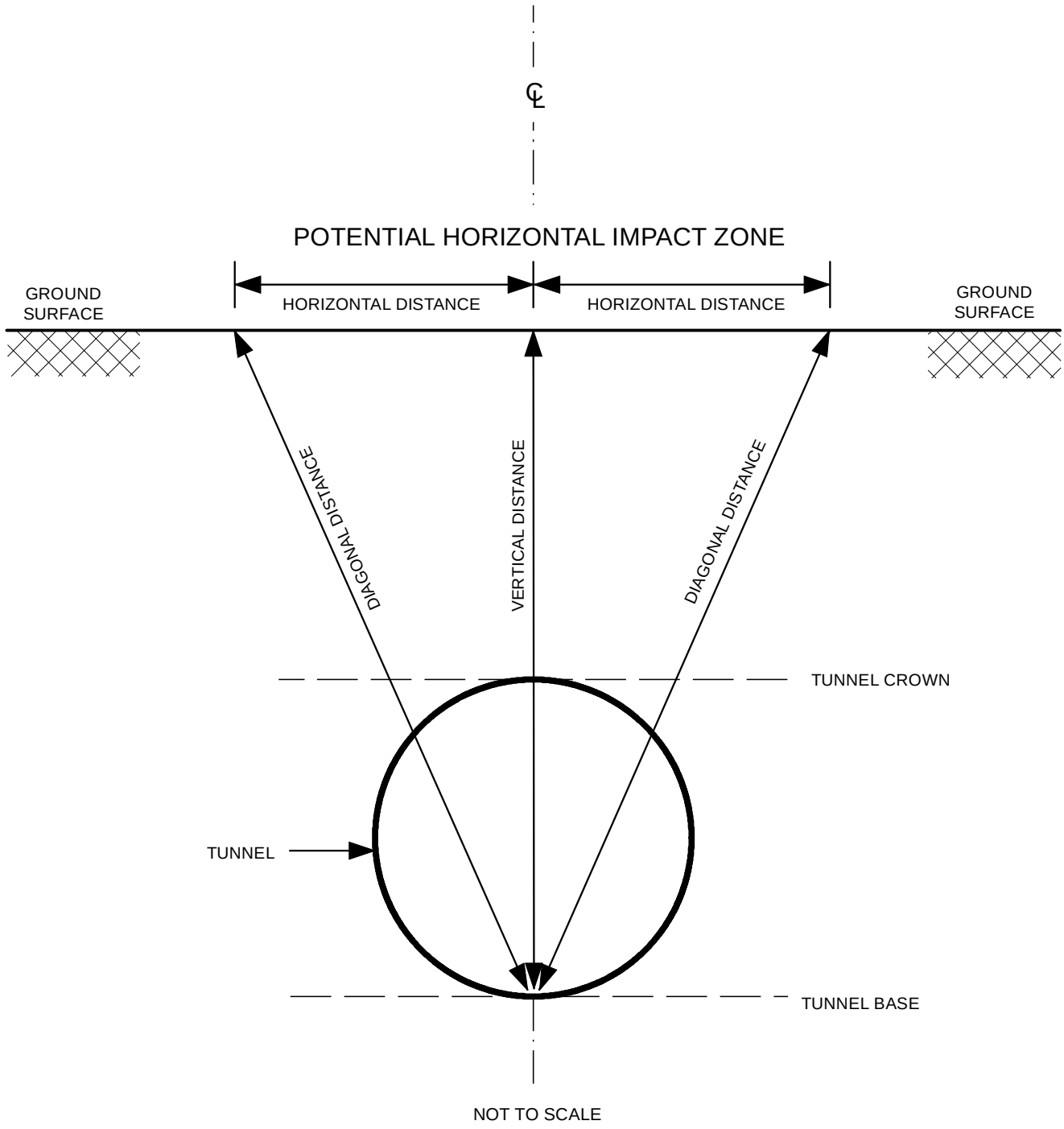


FIGURE 14-2

Potential Horizontal Impact Zone From Tunnel Hauling Activities

Source: Sanitation Districts of Los Angeles County 2011, City of Los Angeles 2005

FIGURE 14-3

CLEARWATER Program

Long-Term Noise Monitoring Locations

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

was to characterize ambient noise levels in the neighborhood near the JWPCP, which has high ambient noise levels from traffic on I-110.

- **LT-4.** Long-term monitoring site LT-4 was located on the bluff overlooking Royal Palms Beach, and set back about 120 feet south of West Paseo Del Mar near its intersection with Western Avenue. The microphone was placed approximately 3 feet above the surrounding ground. The purpose of the measurement at this site was to characterize typical ambient noise levels along this coastal highway environment in the community of San Pedro, including the Royal Palms and Angels Gate shaft sites.

Noise monitoring for the project elements is discussed in Section 14.2.5 where applicable and is summarized in Table 14-9.

Table 14-9. Long-Term Noise Monitoring Locations

Noise Monitoring Site	Location	Loudest Daytime Noise Level dBA L_{eq}(1h)	Quietest Daytime Noise Level dBA L_{eq}(1h)	Quietest Nighttime Noise Level dBA L_{eq}(1h)	L_{dn}
LT-1	Lomita Blvd., near the JWPCP East shaft site	66.4	52.3	52.4	62.4
LT-2	Seaside Ave., near the LAXT shaft site	62.4	57.9	48.6	63.5
LT-3	Figueroa St., near the JWPCP West shaft site	69.6	63.6	60.6	71.5
LT-4	W Paseo Del Mar, near the Royal Palms shaft site	60.3	57.7	58.1	65.2

L_{eq} = equivalent sound level
L_{dn} = day-night sound level
dBA = A-weighted decibel

NEPA No-Federal-Action Baseline

The National Environmental Policy Act (NEPA) no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the condition of resources at the year 2022 when construction of project elements under the U.S. Army Corps of Engineers' (Corps') jurisdiction would conclude.

The project area is fully developed and encompasses industrial, commercial, residential, and recreational uses. Furthermore, the project alternatives would not permanently change land use patterns. Therefore, the analysis assumes that the existing noise and vibration patterns would continue to remain in a comparable state through the completion of construction in 2022. As a result, the NEPA no-federal-action baseline is the same as the CEQA baseline.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

14.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for terrestrial noise and vibrations (NOI):

NOI-1. Exposes persons to or generates noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies.

NOI-2. Exposes persons to or generates excessive groundborne vibration or groundborne noise levels.

NOI-3. Results in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

NOI-4. Results in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

In addition, the program and/or project would pose a significant impact if it:

NOI-5. Is located within an airport land use plan area, or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport and exposes people residing or working in the project area to excessive noise levels.

NOI-6. Is located in the vicinity of a private airstrip and exposes people residing or working in the project area to excessive noise levels.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant noise and vibrations impacts before mitigation. Table 14-10 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 14-10 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 14-10. Thresholds Evaluated

		Threshold					
	Alt.	NOI-1	NOI-2	NOI-3	NOI-4	NOI-5	NOI-6
Program Element							
Conveyance System Improvements	1–5	X			X		
SJCWRP Plant Expansion	1–5	X			X		
SJCWRP Process Optimization	1–4	X			X		
POWRP Process Optimization	1–4	X			X		
LCWRP Process Optimization	1–4	X			X		
LBWRP Process Optimization	1–4	X			X		
JWPCP Solids Processing	1–5	X			X		
JWPCP Biosolids Management	1–5	X		X	X		

Table 14-10 (Continued)

		Threshold					
	Alt.	**NOI-1**	**NOI-2**	**NOI-3**	**NOI-4**	**NOI-5**	**NOI-6**
Project Element							
Wilmington to SP Shelf (onshore tunnel)[a]	1,2		X				
Wilmington to SP Shelf (offshore tunnel)	1		X				
Wilmington to PV Shelf (onshore tunnel)[a]	1,2		X				
Wilmington to PV Shelf (offshore tunnel)	2		X				
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3		X				
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3		X				
Figueroa/ Western to Royal Palms (onshore tunnel)	4		X				
JWPCP East Shaft Site	1,2	X	X		X		
TraPac Shaft Site	1,2	X	X		X		
LAXT Shaft Site	1,2	X	X		X		
Southwest Marine Shaft Site	1,2	X	X		X		
JWPCP West Shaft Site	3,4	X	X		X		
Angels Gate Shaft Site	3	X	X		X		
Royal Palms Shaft Site	4	X	X		X		

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
Alt. = alternative

For a detailed discussion of impacts on noise and vibrations resulting from construction and operations within the riser and diffuser areas, refer to Chapter 13. In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears.

14.4.3 Alternative 1

14.4.3.1 Program

Impact NOI-1. Would Alternative 1 (Program) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

Conveyance System – Conveyance Improvements

Construction

The Los Angeles County ordinance and/or applicable local city noise ordinances for short-term construction noise are applicable to construction of conveyance system improvements throughout the JOS.

Potential noise levels from construction of the conveyance system improvements were evaluated by combining the noise levels of the three loudest pieces of equipment that would likely operate at the same time (loader, backhoe, and truck). The combined noise level is 88 dBA at 50 feet. The estimated sound

levels from construction activities as a function of distance based on calculated point-source attenuation over soft (i.e., acoustically absorptive) ground are shown in Table 14-11.

Table 14-11. Predicted Noise Levels From Construction Activities – Conveyance System

Distance Between Source and Receiver (feet)	Calculated L_{max} Sound Level (dBA)
50	88
100	80
160	75
200	72
250	70
300	68
400	65
500	62
600	60
700	58
800	57
1,000	54

Calculations are based on FTA 2006. Calculation do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further.
L_{max} = maximum sound level
dBA = A-weighted decibel

The results shown in Table 14-11 indicate that residences located within 160 feet of an active construction site could be exposed to construction noise in excess of the county's daytime (7 a.m.–8 p.m.) maximum noise standard of 75 dBA. Nighttime construction of conveyance improvements is not anticipated. However, the Sanitation Districts occasionally conduct nighttime work during times of low wastewater flow for activities such as the connection of new facilities and systems to existing operations. This type of work mostly involves a power shutdown for connection to an electrical system or a flow stoppage for connection to pipes that have no isolation valves or gates. These activities generally would not cause noise to increase noticeably above background levels. City noise ordinances vary by jurisdiction. The conveyance system extends through many residential areas in the county, usually under surface streets that are fronted by single-family homes. Construction activities could occur within 50 feet of a given residence, and construction noise could exceed daytime and nighttime noise standards at nearby residences under applicable local noise ordinance thresholds.

However, no specific conveyance projects have been proposed, and the location, duration, extent, and timing of the sewer relief work are unknown at this time. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract, including installation of new sewers or rehabilitation of existing sewers, to minimize project impacts. These standard practices and requirements contain public outreach requirements and noise-reducing measures. Prior to construction, notices that provide an estimated project schedule and contact information are distributed to the surrounding community. During construction, the Sanitation Districts require contractors to meet local noise ordinances. Therefore, construction noise impacts resulting from conveyance improvements are considered less than significant, and no mitigation is required.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

The Los Angeles County ordinance for short-term construction noise applies to construction of the SJCWRP expansion.

Potential noise levels from construction of the SJCWRP expansion were evaluated by combining the noise levels of the three loudest pieces of equipment that would likely operate at the same time (bulldozer, backhoe, and auger drill rig). Any construction involving piles would utilize a drilling method, rather than impact pile driving. The combined noise level is 89 dBA at 50 feet. The estimated sound levels from construction activities as a function of distance based on calculated point-source attenuation over soft ground are shown in Table 14-12.

Table 14-12. Predicted Noise Levels From Construction Activities at SJCWRP – Plant Expansion

Distance Between Source and Receiver (feet)	Calculated L_{max} Sound Level (dBA)
50	89
100	82
200	74
400	66
600	61
800	58
900	57

Calculations are based on FTA 2006. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further.

L_{max} = maximum sound level

dBA = A-weighted decibel

Expansion activities would occur on the western part of the property. The nearest residences west of the SJCWRP are approximately 600 feet to the southwest across SR-60 and 900 feet to the northwest across San Jose Creek. Any construction noise at residences adjacent to SR-60 would be overshadowed by traffic noise. The results shown in Table 14-12 indicate that residences located within 900 feet of the SJCWRP construction site could be exposed to a construction noise level of about 57 dBA, which is below the county's daytime maximum noise standard of 75 dBA. Nighttime construction of plant expansion elements at the SJCWRP is not anticipated. However, the Sanitation Districts occasionally conduct nighttime work at the plant during times of low wastewater flow for activities such as the connection of new facilities and systems to existing operations. This type of work mostly involves a power shutdown for connection to an electrical system or a flow stoppage for connection to pipes or channels that have no isolation valves or gates. These activities generally would not cause noise to increase noticeably above background levels. Therefore, construction noise impacts resulting from the SJCWRP plant expansion are considered less than significant, and no mitigation is required.

San Jose Creek Water Reclamation Plant – Process Optimization

Construction

The Los Angeles County ordinance for short-term construction noise is applicable to construction of the SJCWRP process optimization facilities.

Potential noise levels from construction of the SJCWRP process optimization facilities were evaluated by summing the noise levels of the three loudest pieces of equipment that would likely operate at the same time (bulldozer, backhoe, and trucks). The combined noise level is 88 dBA at 50 feet. The estimated sound levels from construction activities as a function of distance based on calculated point-source attenuation over soft ground are shown in Table 14-13.

Table 14-13. Predicted Noise Levels From Construction Activities at SJCWRP – Process Optimization

Distance Between Source and Receiver (feet)	Calculated L_{max} Sound Level (dBA)
50	88
100	80
160	75
200	72
250	70
300	68
400	65
500	62
600	60
700	58
800	57
1,000	54

Calculations are based on FTA 2006. Calculation do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further.

L_{max} = maximum sound level

dBA = A-weighted decibel

The nearest residences to the SJCWRP are approximately 400 feet to the east across San Jose Creek. The results shown in Table 14-13 indicate that residences located within 400 feet of the construction site at the SJCWRP would not be exposed to construction noise in excess of the county's daytime maximum standard of 75 dBA. Nighttime construction of process optimization elements at the SJCWRP is not anticipated. However, the Sanitation Districts occasionally conduct nighttime work at the plant during times of low wastewater flow for activities such as the connection of new facilities and systems to existing operations. This type of work mostly involves a power shutdown for connection to an electrical system or a flow stoppage for connection to pipes or channels that have no isolation valves or gates. These activities generally would not cause noise impacts beyond background levels. Therefore, noise impacts resulting from construction of the SJCWRP process optimization facilities are considered less than significant, and no mitigation is required.

Pomona Water Reclamation Plant – Process Optimization

Construction

The city of Pomona ordinance for construction noise is applicable to construction of the POWRP process optimization facilities.

Potential noise levels from construction of the POWRP process optimization facilities were evaluated by summing the noise levels of pieces of equipment that would likely operate at the same time (bulldozer, backhoe, and trucks), and applying a 40 percent utilization factor (Thalheimer 2000) for each piece of equipment. The combined L_{eq} noise level is 86 dBA at 50 feet. The estimated sound levels from

construction activities as a function of distance based on calculated point-source attenuation over soft ground are shown in Table 14-14.

Table 14-14. Predicted Noise Levels From Construction Activities – POWRP

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level (dBA)
50	86
100	78
200	71
500	60
1,000	52

Calculations are based on FTA 2006. Calculation do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further.
L_{eq} = A-weighted equivalent sound level
dBA = A-weighted decibel

The nearest residences to the POWRP are approximately 1,000 feet to the north across a railway and West Pomona Boulevard. The results shown in Table 14-14 indicate that residences located within 1,000 feet of the construction site at the POWRP would not be exposed to construction noise levels that would exceed the city's daytime noise standard of 60 dBA L_{eq} for equipment operating up to 30 minutes in a given 1-hour period. Nighttime construction of process optimization elements at the POWRP is not anticipated. However, the Sanitation Districts occasionally conduct nighttime work at the plant during times of low wastewater flow for activities such as the connection of new facilities and systems to existing operations. This type of work mostly involves a power shutdown for connection to an electrical system or a flow stoppage for connection to pipes or channels that have no isolation valves or gates. These activities generally would not cause noise impacts beyond background levels. Therefore, noise impacts resulting from construction of the POWRP process optimization facilities are considered less than significant, and no mitigation is required.

Los Coyotes Water Reclamation Plant – Process Optimization

Construction

The city of Cerritos noise ordinance is applicable to construction of the LCWRP process optimization facilities.

Potential noise levels from construction of the LCWRP process optimization facilities were evaluated by summing the noise levels of pieces of equipment that would likely operate at the same time (bulldozer, backhoe, and trucks), and applying a 40 percent utilization factor for each piece of equipment. The combined L_{eq} noise level is 86 dBA at 50 feet. The estimated sound levels from construction activities as a function of distance based on calculated point-source attenuation over soft ground are shown in Table 14-15.

Table 14-15. Predicted Noise Levels From Construction Activities – LCWRP

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level (dBA)
50	86
100	78
200	71
500	60
700	56
1,000	52

Calculations are based on FTA 2006. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further.
L_{eq} = equivalent sound level
dBA = A-weighted decibel

The nearest residences to the LCWRP process optimization site are approximately 700 feet to the east across a 10-lane segment of I-605. Construction noise from the LCWRP would be overshadowed by traffic noise in this location. The second-nearest residences to the LCWRP are approximately 1,000 feet to the west across the channelized San Gabriel River. The results shown in Table 14-15 indicate that residences located within 1,000 feet of the construction site at the LCWRP would not be exposed to a construction noise level resulting in a 5 dB increase over the city's daytime noise standard of 50 dBA L_{eq}. Nighttime construction of process optimization elements at the LCWRP is not anticipated. However, the Sanitation Districts occasionally conduct nighttime work at the plant during times of low wastewater flow for activities such as the connection of new facilities and systems to existing operations. This type of work mostly involves a power shutdown for connection to an electrical system or a flow stoppage for connection to pipes or channels that have no isolation valves or gates. These activities generally would not cause noise impacts beyond background levels. Therefore, noise impacts resulting from construction of the LCWRP process optimization facilities are considered less than significant, and no mitigation is required.

Long Beach Water Reclamation Plant – Process Optimization

Construction

The Long Beach noise ordinance is applicable to construction of the LBWRP process optimization facilities.

Potential noise levels from construction of the LBWRP process optimization facilities were evaluated by summing the noise levels of pieces of equipment that would likely operate at the same time (bulldozer, backhoe, and trucks), and applying a 40 percent utilization factor for each piece of equipment. The combined L_{eq} noise level is 86 dBA at 50 feet. The estimated sound levels from construction activities as a function of distance based on calculated point-source attenuation over soft ground are shown in Table 14-16.

Table 14-16. Predicted Noise Levels From Construction Activities – LBWRP

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level (dBA)
50	86
100	78
250	71
500	60
1,000	52
1,200	50
1,500	48
2,000	44

Calculations are based on FTA 2006. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further.
L_{eq} = equivalent sound level
dBA = A-weighted decibel

The nearest residences to the LBWRP process optimization site are approximately 1,200 feet to the east across a 10-lane segment of I-605. Construction noise from the LBWRP would be overshadowed by traffic noise on I-605. The second-nearest residences to the LBWRP are approximately 2,000 feet to the west across the channelized San Gabriel River. The results shown in Table 14-16 indicate that residences located within 2,000 feet of the construction site at the LBWRP could be exposed to a construction noise level of about 44 dBA, which is below the city's daytime maximum noise standard of 50 dBA. However, the Sanitation Districts occasionally conduct nighttime work at the plant during times of low wastewater flow for activities such as the connection of new facilities and systems to existing operations. This type of work mostly involves a power shutdown for connection to an electrical system or a flow stoppage for connection to pipes or channels that have no isolation valves or gates. These activities generally would not cause noise impacts beyond background levels. Therefore, noise impacts resulting from construction of the LBWRP process optimization facilities are considered less than significant, and no mitigation is required.

Joint Water Pollution Control Plant – Solids Processing

Construction

The city of Carson noise ordinance is applicable to short-term construction noise associated with solids processing facilities at the JWPCP. The construction of new facilities at the JWPCP is anticipated to take place during daytime hours only.

Potential noise levels from construction of the JWPCP solids processing facilities were evaluated by summing the noise levels of the three loudest pieces of equipment that would likely operate at the same time (bulldozer, backhoe, and trucks). The combined noise level is 88 dBA at 50 feet. The estimated sound levels from construction activities as a function of distance based on calculated point-source attenuation over soft ground are shown in Table 14-17.

Table 14-17. Predicted Noise Levels From Construction Activities – JWPCP Solids Processing

Distance Between Source and Receiver (feet)	Calculated L_{max} Sound Level (dBA)
50	88
100	80
200	72
300	68
400	65
500	62
1,100	53

Calculations are based on FTA 2006. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further.

L_{max} = Maximum sound level

dBA = A-weighted decibel

The nearest residences to the JWPCP solids processing construction sites are approximately 400 feet to the southwest across an 8-lane segment of I-110. The results shown in Table 14-17 indicate that residences located within 400 feet of the construction site could be exposed to a construction noise level of about 65 dBA, which is below the city's daytime maximum construction noise standard of 75 dBA. Further, construction noise from the JWPCP solid processing sites would be overshadowed by traffic on I-110. Therefore, noise impacts resulting from construction of the JWPCP solids processing facilities are considered less than significant, and no mitigation is required.

Joint Water Pollution Control Plant – Biosolids Management

Operation

The increase in biosolids generated by the JWPCP would result in an estimated increase in heavy truck trips of approximately 20 per day. The existing noise levels near surface streets adjacent to the JWPCP are in the range of 52 to 66 dBA L_{eq} (1h). Based on TNM modeling results, this increased truck traffic is predicted to produce an overall increase of less than 1 dB in ambient noise levels. Therefore, impacts are considered less than significant.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact NOI-3. Would Alternative 1 (Program) result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Joint Water Pollution Control Plant – Biosolids Management

Operation

As stated under Impact NOI-1, the truck traffic increase from the JWPCP is predicted to produce an overall increase of less than 1 dB in ambient noise levels. Therefore, impacts are considered less than significant.

CEQA Impact Determination

Operation of Alternative 1 (Program) would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact NOI-4. Would Alternative 1 (Program) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Conveyance System – Conveyance Improvements

Construction

Construction impacts associated with conveyance improvements under Alternative 1 (Program) were previously discussed under Impact NOI-1. The Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract, including installation of new sewers or rehabilitation of existing sewers, to minimize project impacts. These standard practices and requirements contain public outreach requirements and noise-reducing measures. Prior to construction, notices that provide an estimated project schedule and contact information are distributed to the surrounding community. During construction, Sanitation Districts require contractors to meet local noise ordinances. Therefore, construction noise impacts resulting from conveyance improvements are considered less than significant, and no mitigation is required.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Construction associated with the SJCWRP plant expansion would temporarily increase noise in the vicinity of the plant. Noise increases would result from onsite construction activities (especially during site preparation, grading, and other earthmoving activities) and from construction-related vehicle traffic delivering materials to and from the construction site. The results shown in Table 14-12 indicate that residences located within 900 feet of the SJCWRP construction site could be exposed to a construction

noise level of about 57 dBA, which could result in a noise increase of 5 dB or more above ambient noise levels. This would be considered a detectable increase in ambient noise levels. Because a substantial temporary increase in ambient noise levels is predicted to occur during construction of plant expansion facilities at the SJCWRP, impacts are considered significant. Implementation of Mitigation Measure (MM) NOI-4a and MM NOI-4b would reduce impacts to less than significant.

Operation

An emergency generator is scheduled to be installed in the western section of the SJCWRP. The generator could intermittently cause an increase in ambient noise levels adjacent to the SJCWRP during times when emergency power is required and when the generator system is tested. This generator would be housed in an acoustical enclosure. Noise emissions from the generator would be required to conform to acoustical performance standards specified by the Sanitation Districts. Each piece of equipment at SJCWRP is required to produce a noise level of no more than 85 dBA at a distance of 3 feet from the source.

The nearest residences west of the SJCWRP are approximately 600 feet to the southwest across SR-60 and 900 feet to the northwest across San Jose Creek. Operations noise at residences adjacent to SR-60 would be overshadowed by traffic noise. During times of operation, the emergency generator is predicted to produce an overall increase of less than 1 dB in ambient noise levels at nearby residential locations. This would not be a detectable increase in noise levels, and impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Process Optimization

Construction

Construction associated with SJCWRP process optimization under Alternative 1 (Program) would temporarily increase noise in the vicinity of the plant. Noise increases would result from onsite construction activities (especially during site preparation, grading, and other earthmoving activities) and from construction-related vehicle traffic delivering materials to and from the construction site. The CEQA analysis for the construction of process optimization at the SJCWRP is the same as discussed under Impact NOI-1. The results shown in Table 14-13 indicate that residences located within 400 feet of the SJCWRP construction site could be exposed to a construction noise level of about 65 dBA, which could result in a noise increase of 5 dB or more above ambient noise levels. This would be a detectable increase in noise levels. Because a substantial temporary increase in ambient noise levels is predicted to occur during construction of process optimization facilities at the SJCWRP, impacts are considered significant. Implementation of MM NOI-4a and MM NOI-4b would reduce impacts to less than significant.

Pomona Water Reclamation Plant – Process Optimization

Construction

Construction associated with POWRP process optimization under Alternative 1 (Program) would temporarily increase noise in the vicinity of the plant. Noise increases would result from onsite construction activities (especially during site preparation, grading, and other earthmoving activities) and from construction-related vehicle traffic delivering materials to and from the construction site. The CEQA analysis for the construction of process optimization at the POWRP is the same as discussed under Impact NOI-1. The results shown in Table 14-14 indicate that residences located within 1,000 feet of the POWRP construction site could be exposed to a construction noise level of about 52 dBA. Construction

noise at the POWRP would be overshadowed by local traffic noise and would not result in a substantial increase above ambient noise levels in this urban setting. Impacts would be less than significant.

Los Coyotes Water Reclamation Plant – Process Optimization

Construction

Construction associated with LCWRP process optimization under Alternative 1 (Program) would temporarily increase noise in the vicinity of the plant. Noise increases would result from onsite construction activities (especially during site preparation, grading, and other earthmoving activities) and from construction-related vehicle traffic delivering materials to and from the construction site. The CEQA analysis for the construction of process optimization at the LCWRP is the same as discussed under Impact NOI-1. The results shown in Table 14-15 indicate that residences located within 1,000 feet of the LCWRP construction site could be exposed to a construction noise level of about 52 dBA, which would not result in a substantial increase above ambient noise levels in this urban setting. Impacts would be less than significant.

Long Beach Water Reclamation Plant – Process Optimization

Construction

Construction associated with LBWRP process optimization under Alternative 1 (Program) would temporarily increase noise in the vicinity of the plant. Noise increases would result from onsite construction activities (especially during site preparation, grading, and other earthmoving activities) and from construction-related vehicle traffic delivering materials to and from the construction site. The CEQA analysis for the construction of process optimization at the LBWRP is the same as discussed under Impact NOI-1. The results shown in Table 14-16 indicate that residences located within 2,000 feet of the LBWRP construction site could be exposed to a construction noise level of about 44 dBA, which would not result in a substantial increase above ambient noise levels in this urban setting next to a transportation corridor. Impacts would be less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

Construction associated with the JWPCP solids processing facilities would temporarily increase noise in the vicinity of the plant. Noise increases would result from onsite construction activities (especially during site preparation, grading, and other earthmoving activities) and from construction-related vehicle traffic delivering materials to and from the construction site. The CEQA analysis for the construction of solids processing facilities is the same as discussed under Impact NOI-1. The results shown in Table 14-17 indicate that residences located within 1,100 feet of the JWPCP solids processing sites could be exposed to a construction noise level of about 53 dBA, which would not result in a substantial increase above ambient noise levels in this urban setting. Impacts would be less than significant.

Joint Water Pollution Control Plant – Biosolids Management

Operation

As stated under Impact NOI-1, the truck traffic increase from the JWPCP is predicted to produce an overall increase of less than 1 dB in ambient noise levels. This would not result in a substantial increase above ambient noise levels in this urban setting. Impacts would be less than significant.

CEQA Impact Determination

Construction of the plant expansion at the SJCWRP and process optimization at the SJCWRP for Alternative 1 (Program) would result in a substantial temporary or periodic increase in ambient noise levels in the plant vicinity above levels existing without the program. Impacts would be significant before mitigation. Operation of Alternative 1 (Program) would result in less than significant impacts.

Mitigation

MM NOI-4a. Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following:

- Limit construction operations to exempt hours
- Locate equipment as far as practical from noise-sensitive uses
- Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation
- Prohibit gasoline or diesel engines from having unmuffled exhaust
- Use noise-reducing enclosures around noise-generating equipment
- Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission

MM NOI-4b. Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.

Residual Impacts

MM NOI-4a and MM NOI-4b would reduce the significant impacts associated with plant expansion and process optimization construction at the SJCWRP. The mitigation measures would reduce noise at sensitive receptors to below local standards. Therefore, residual impacts would be less than significant.

14.4.3.2 Project

Impact NOI-1. Would Alternative 1 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

Shaft Site – JWPCP East

Construction

CEQA Analysis

The cities of Los Angeles and Carson ordinances for construction noise are both applicable to construction at the JWPCP East shaft site. The JWPCP East shaft site is a working shaft site, and construction activities would likely occur 10 to 24 hours a day. Therefore, daytime and nighttime noise standards apply.

Potential noise levels resulting from construction at the JWPCP East shaft site were evaluated by assigning utilization factors and quantities to pieces of equipment that would be used during shaft and tunneling construction. These adjusted noise levels were then summed to calculate an overall L_{eq} noise level at the shaft site. These assumptions are summarized in Table 14-18.

Table 14-18. Construction Source Level Assumptions – JWPCP East

Equipment Type	Quantity	L_{max} Sound Level at 50 Feet (dBA)	Utilization Factor (percent)	L_{eq} Sound Level at 50 Feet (dBA)
Hydraulic Excavator – Large	1	85[a]	20	78
Hydraulic Excavator – Medium	1	85[a]	30	80
Motor Grader	1	85[a]	75	84
Loaders – Wheeled	2	85[b]	60	86
Crawler Crane	2	85[a]	25	82
Water Truck	1	84[a]	30	79
All Sources Combined				90

[a] Source: FTA 2006
[b] Source: Thalheimer 2000
L_{max} = maximum sound level
L_{eq} = equivalent sound level
dBA = A-weighted decibel

The combined noise level is 90 dBA L_{eq} at 50 feet. To reduce the neighborhood noise impacts, the Sanitation Districts are planning to construct noise barriers along the southern and eastern boundaries of the shaft site that front Lomita Boulevard and Main Street, respectively. Estimated sound levels from construction activities, including estimated noise barrier reduction, as a function of distance are shown in Table 14-19. Calculations are based on point-source attenuation over soft ground.

Table 14-19. Predicted Noise Levels From Construction Activities – JWPCP East Shaft Site

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level No Noise Barrier (dBA)	Estimated Barrier Noise Reduction (dB)	Calculated L_{eq} Sound Level With Noise Barrier (dBA)
50	90	14	76
100	82	11	71
200	74	9	65
300	70	8	62
400	66	7	59
500	64	7	57
600	62	7	55
700	60	7	53
800	59	6	53
900	57	6	51
1,000	56	6	50

Calculations are based on FTA 2006. Barrier noise reduction calculations are based on attenuation of construction noise sources with principal frequencies in the 125 to 500 Hz octave bands. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further. Noise barriers are assumed to have a height of 20 feet.

L_{eq} = equivalent sound level

dBA = A-weighted decibel

dB = decibel

There are several noise-sensitive receptors adjacent to the JWPCP East shaft site. The shaft site is located in the city of Carson, but the closest noise-sensitive receptors are to the south in the city of Los Angeles, so the more restrictive city standards are used in this analysis. The closest residential receptors are 150 feet to the south across Lomita Boulevard. Wilmington Junior High School is located about 600 feet southeast of the shaft site. The next-closest residential neighborhood lies approximately 1,200 feet to the east of the shaft site beyond a row of commercial and industrial buildings in the city of Carson.

The City of Los Angeles General Plan Noise Element states that the expected ambient noise level in residential areas during the nighttime is 40 dBA. The city's noise ordinance states that the expected ambient noise level in a given area may not be increased by more than 5 dB. If the measured baseline ambient noise level is greater than 40 dBA, the measured value should be used as the baseline.

Noise monitoring data collected at the JWPCP East shaft site indicate that 52 dBA is the lowest noise level equivalent at residences nearest to the shaft site when construction would take place (nighttime). The city ordinance indicates that construction noise from the shaft site should not exceed this measured ambient level plus 5 dB, or 57 dBA L_{eq}. (Note that this noise standard essentially dictates that impact assessments discussed under Impact NOI-4 are equivalent to those discussed here, for project elements located in the city of Los Angeles.)

The results shown in Table 14-19 indicate that residences located within 500 feet of the JWPCP East shaft site could be exposed to construction noise levels of 57 dBA or higher (an increase of 5 dB above the measured ambient level).

Neither the city's noise element nor its noise ordinance explicitly states noise level restrictions for schools. For this analysis, the noise-level restrictions applied to residential land uses will be applied to the school. This is a conservative approach because residential noise limits are usually more stringent than limits for any other land use. The construction noise level at the school is predicted to be 55 dBA L_{eq}.

Construction noise would exceed city nighttime noise standards at nearby residences. Therefore, impacts are considered significant. Implementation of MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b) would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – TraPac

Construction

CEQA Analysis

The city of Los Angeles ordinance for construction noise is applicable to construction at the TraPac access shaft site. Construction of the TraPac shaft would only occur during daytime hours. However, access to the shaft during construction of the tunnel may also be required during nighttime hours.

Potential noise levels resulting from construction of the TraPac access shaft were evaluated by assigning utilization factors and quantities to pieces of equipment that would be used during shaft construction. These adjusted noise levels were then summed to calculate an overall L_{eq} noise level at the shaft site. These assumptions are summarized in Table 14-20.

Table 14-20. Construction Source Level Assumptions – TraPac Shaft Site

Equipment Type	Quantity	L_{max} Sound Level at 50 Feet (dBA)	Utilization Factor (percent)	L_{eq} Sound Level at 50 Feet (dBA)
Hydraulic Excavator – Large	1	85[a]	50	82
Hydraulic Excavator – Medium	1	85[a]	30	80
Motor Grader	1	85[a]	25	79
Loaders – Wheeled	2	85[b]	75	87
Crawler Crane	2	85[a]	50	85
Water Truck	1	84[a]	25	78
All Sources Combined				91

[a] Source: FTA 2006
[b] Source: Thalheimer 2000
L_{max} = maximum sound level
L_{eq} = equivalent sound level
dBA = A-weighted decibel

The combined noise level is 91 dBA L_{eq} at 50 feet. The Sanitation Districts do not plan to install a noise barrier at the TraPac shaft site, so barrier noise reduction was not calculated. Estimated sound levels from construction activities are shown in Table 14-21. Calculations are based on point-source attenuation over soft ground.

Table 14-21. Predicted Noise Levels From Construction Activities – TraPac Shaft Site

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level No Noise Barrier (dBA)
50	91
100	83
200	75
300	70
400	67
500	65
600	63
700	61
800	59
900	58
1,000	57

Calculations are based on FTA 2006. Calculations do not include the effects, if any, of local shielding from walls, topography, or barriers that may reduce sound levels further.
L_{eq} = equivalent sound level
dBA = A-weighted decibel
dB = decibel

The City of Los Angeles General Plan Noise Element states that the expected ambient noise level in residential areas during the day is 50 dBA. The city's noise ordinance states that the expected ambient noise level in a given area may not be increased by more than 5 dB. If the measured baseline ambient noise level is greater than 50 dBA, the measured value should be used as the baseline.

Noise monitoring data were collected at the LAXT shaft site, about 2 miles south of TraPac. Ambient noise levels recorded at the LAXT shaft site are considered in this analysis as representative of the port setting. The noise monitoring data indicate that 58 dBA is the lowest noise L_{eq} at residences nearest to the shaft site when construction would take place (during daytime hours). The city ordinance indicates that construction noise from the shaft site should not exceed this measured ambient level plus 5 dB, or 63 dBA L_{eq}. During nighttime hours when access to the shaft may be required, the lowest level measured was 49 dBA L_{eq}. The city ordinance indicates that nighttime noise from generators at the shaft site should not exceed the measured ambient level plus 5 dB, or 54 dBA L_{eq}. (Note that this noise standard essentially dictates that impact assessments discussed under Impact NOI-4 are equivalent to those discussed here, for project elements located in the city of Los Angeles.)

The results shown in Table 14-21 indicate that the nearest residences (located approximately 700 feet from the TraPac shaft site) could be exposed to construction noise levels of 61 dBA (less than 5 dB above the ambient level). Nighttime shaft site access may require the use of a generator (assumed to have a rated output of 25 KVA or greater) to power ventilation equipment inside the tunnel. At a distance of 700 feet from the shaft site, noise levels from the generator would be about 49 dBA L_{eq}. This is equal to (i.e., less than 5 dB above) the ambient nighttime noise level. Therefore, construction noise at the TraPac shaft site would not exceed city noise standards. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – LAXT

Construction

CEQA Analysis

The city of Los Angeles ordinance for construction noise is applicable to construction at the LAXT shaft site. The LAXT shaft site is a working shaft site, and construction activities would likely occur 10 to 24 hours a day. Therefore, daytime and nighttime noise standards apply.

Potential noise levels resulting from construction at the LAXT shaft site were evaluated by assigning utilization factors and quantities to pieces of equipment typically used during shaft and tunnel construction. These adjusted noise levels were then summed to calculate an overall L_{eq} noise level at the shaft site. These assumptions are summarized in Table 14-22.

Table 14-22. Construction Source Level Assumptions – LAXT Shaft Site

Equipment Type	Quantity	L_{max} Sound Level at 50 Feet (dBA)	Utilization Factor (percent)	L_{eq} Sound Level at 50 Feet (dBA)
Hydraulic Excavator – Large	1	85[a]	20	78
Hydraulic Excavator – Medium	1	85[a]	30	80
Motor Grader	1	85[a]	75	84
Loaders – Wheeled	2	85[b]	60	86
Crawler Crane	2	85[a]	25	82
Water Truck	1	84[a]	30	79
All Sources Combined				90

[a] Source: FTA 2006
[b] Source: Thalheimer 2000
L_{max} = maximum sound level
L_{eq} = equivalent sound level
dBA = A-weighted decibel

The combined noise level is 90 dBA L_{eq} at 50 feet. To reduce the noise impacts of ongoing tunneling construction at the shaft site, the Sanitation Districts are planning to construct a noise barrier along the northwest boundary of the shaft site that faces Fire Station 40. Estimated sound levels from construction activities, including estimated noise barrier reduction, as a function of distance are shown in Table 14-23. Calculations are based on point-source attenuation over soft ground.

Table 14-23. Predicted Noise Levels From Construction Activities – LAXT Shaft Site

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level No Noise Barrier (dBA)	Estimated Barrier Noise Reduction (dB)	Calculated L_{eq} Sound Level With Noise Barrier (dBA)
50	90	14	76
100	82	11	71
200	74	9	65
300	70	8	62
400	66	7	59
500	64	7	57
600	62	7	55

Table 14-23 (Continued)

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level No Noise Barrier (dBA)	Estimated Barrier Noise Reduction (dB)	Calculated L_{eq} Sound Level With Noise Barrier (dBA)
700	60	7	53
800	59	6	53
900	57	6	51
1,000	56	6	50

Calculations are based on FTA 2006. Barrier noise reduction calculations are based on attenuation of construction noise sources with principal frequencies in the 125 to 500 Hz octave bands. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further. Noise barriers are assumed to have a height of 20 feet.

L_{eq} = equivalent sound level

dBA = A-weighted decibel

dB = decibel

The City of Los Angeles General Plan Noise Element states that the expected ambient noise level in residential areas during the nighttime is 40 dBA. The city's noise ordinance states that the expected ambient noise level in a given area may not be increased by more than 5 dB. If the measured baseline ambient noise level is greater than 40 dBA, the measured value should be used as the baseline.

Noise monitoring data collected at the LAXT shaft site indicate that 49 dBA is the lowest noise L_{eq} at locations nearest to the shaft site when construction would take place (nighttime). The city ordinance indicates that construction noise from the shaft site should not exceed this measured ambient level plus 5 dB, or 54 dBA L_{eq}. (Note that this noise standard essentially dictates that impact assessments discussed under Impact NOI-4 are equivalent to those discussed here, for project elements located in the city of Los Angeles.)

The nearest residential receptors to the LAXT are over 1 mile from the shaft site. However, Fire Station 40 is approximately 100 feet from the edge of the shaft site. Because firefighters sleep at the fire station, it is treated as a residence or sensitive receptor in this analysis. The city does not specify an interior residential noise standard. Therefore, the county of Los Angeles interior nighttime noise standard of 40 dBA L_{eq} would apply to this analysis. Assuming an outdoor-to-indoor noise reduction of 20 dB, the interior noise level at the fire station would be approximately 51 dBA (the exterior noise level is 71 dBA at 100 feet, as shown in Table 14-23). This exceeds the county's interior nighttime level of 40 dBA. Because construction noise would exceed county interior nighttime noise standards at a nearby residence, this impact is considered significant. Implementation of MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b) would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Southwest Marine

Construction

CEQA Analysis

The city of Los Angeles ordinance for construction noise is applicable to construction at the Southwest Marine access shaft site. Construction of the Southwest Marine shaft would only occur during daytime

hours. However, access to the shaft during construction of the tunnel may be also required during nighttime hours.

Potential noise levels resulting from construction of the Southwest Marine access shaft were evaluated by assigning utilization factors and quantities to pieces of equipment typically used during shaft site and tunneling construction. These adjusted noise levels were then summed to calculate an overall L_{eq} noise level at the shaft site. These assumptions are summarized in Table 14-24.

Table 14-24. Construction Source Level Assumptions – Southwest Marine Shaft Site

Equipment Type	Quantity	L_{max} Sound Level at 50 Feet (dBA)	Utilization Factor (percent)	L_{eq} Sound Level at 50 Feet (dBA)
Hydraulic Excavator – Large	1	85[a]	50	82
Hydraulic Excavator – Medium	1	85[a]	30	80
Motor Grader	1	85[a]	25	79
Loaders – Wheeled	2	85[b]	75	87
Crawler Crane	2	85[a]	50	85
Water Truck	1	84[a]	25	78
All Sources Combined				91

[a] Source: FTA 2006
[b] Source: Thalheimer 2000
L_{max} = maximum sound level
L_{eq} = equivalent sound level
dBA = A-weighted decibel

The combined noise level is 91 dBA L_{eq} at 50 feet. To reduce noise impacts, the Sanitation Districts are planning to construct noise barriers at the shaft site. Estimated sound levels from construction activities, including estimated noise barrier reduction, as a function of distance are shown in Table 14-25. Predicted levels are based on point-source attenuation over soft ground.

Table 14-25. Predicted Noise Levels From Construction Activities – Southwest Marine Shaft Site

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level No Noise Barrier (dBA)	Estimated Barrier Noise Reduction (dB)	Calculated L_{eq} Sound Level With Noise Barrier (dBA)
50	91	14	77
100	83	11	72
200	75	9	66
300	70	8	62
400	67	7	60
500	65	7	58
600	63	7	56
700	61	7	54
800	59	6	53
900	58	6	52
1,000	57	6	51

Calculations are based on FTA 2006. Barrier noise reduction calculations are based on attenuation of construction noise sources with principal frequencies in the 125 to 500 Hz octave bands. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further. Noise barriers are assumed to have a height of 20 feet.
L_{eq} = equivalent sound level
dBA = A-weighted decibel
dB = decibel

The City of Los Angeles General Plan Noise Element states that the expected ambient noise level in residential areas during the day is 50 dBA. The city's noise ordinance states that the expected ambient noise level in a given area may not be increased by more than 5 dB. If the measured baseline ambient noise level is greater than 50 dBA, the measured value should be used as the baseline.

Noise monitoring data were collected at the LAXT shaft site, about 1 mile northeast of the shaft site. Ambient noise levels recorded at the LAXT site are considered in this analysis as representative of the port setting at Southwest Marine. The noise monitoring data indicate that 58 dBA is the lowest noise L_{eq} at residences nearest to the shaft site when construction would take place (during daytime hours). The city ordinance indicates that construction noise from the shaft site should not exceed this measured ambient level plus 5 dB, or 63 dBA L_{eq}. During nighttime hours when access to the shaft may be required, the lowest level measured was 49 dBA L_{eq}. The city ordinance indicates that nighttime noise from generators at the shaft site should not exceed the measured ambient level plus 5 dB, or 54 dBA L_{eq}. (Note that this noise standard essentially dictates that impact assessments discussed under Impact NOI-4 are equivalent to those discussed here, for project elements located in the city of Los Angeles.)

The Terminal Island Federal Prison boundary is approximately 200 feet from the shaft site. The results shown in Table 14-25 indicate an exterior noise level of 66 dBA at this location with a noise barrier installed at the shaft site. The nearest residential use is more than 0.7 mile from the shaft site. However, Fire Station 111 is approximately 100 feet from the edge of the shaft site. Because firefighters sleep at the fire station, it is treated as a residence or sensitive receptor in this analysis. Construction at Southwest Marine would occur during daytime hours, so construction of the shaft site would not cause nighttime noise impacts at the fire station. Nighttime shaft site access may require the use of a generator (assumed to have a rated output of 25 KVA or greater) to power ventilation equipment inside the tunnel. At a distance of 100 feet from the shaft site, noise levels from the generator would be about 71 dBA L_{eq} without a noise barrier. With the noise barrier in place, this level would reduce to 60 dBA L_{eq}, which is above the nighttime ambient noise level. Therefore, construction noise at the Southwest Marine shaft site would exceed city noise standards. Noise impacts resulting from daytime construction or nighttime access at the Southwest Marine shaft site are considered significant. Implementation of MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b) would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP East, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) would expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b).

Residual Impacts

MM NOI-1a and MM NOI-1b would reduce the significant impacts associated with construction activities at the JWPCP East, LAXT, and Southwest Marine shaft sites. The mitigation measures

would reduce noise at sensitive receptors below local standards. Therefore, residual impacts would be less than significant.

NEPA Impact Determination

Construction at the JWPCP East, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) would expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b).

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact NOI-2. Would Alternative 1 (Project) expose persons to or generate excessive groundborne vibration or groundborne noise levels?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

The tunnel alignment under Alternative 1 follows Wilmington Boulevard through mostly densely populated single- and multi-family residential areas. The tunnel would also pass near several churches, overnight lodging, and commercial areas as it continues to the Port of Los Angeles.

Construction of the tunnel alignment could potentially cause groundborne vibration and noise in the immediate vicinity of the tunneling operations. Vibration sources include the TBM and haul trains shuttling equipment, materials, and construction workers between the JWPCP East and/or LAXT shaft site(s) and the face of the tunnel. Construction vibrations would be intermittent and short-term, ceasing after tunneling work is complete.

As described in Section 14.4.1.4, groundborne vibration levels from operation of the TBM are anticipated to be below the impact threshold. Under Alternative 1, the tunnel crown depth would range between 100 and 200 feet bgs. For the IRP study, which was based on an average tunnel depth of 50 feet, groundborne vibration levels from the TBM were below the impact threshold. Therefore, impacts from TBM operations would be less than significant.

Groundborne vibrations and noise from the wheel-rail interface during haul train passbys would originate from the tunnel base rather than the tunnel crown, as in the case of TBM operations. The tunnel base would have a minimum depth of approximately 120 feet under Alternative 1. As shown on Figure 14-1, passbys occurring at this depth would be below groundborne vibration and noise thresholds. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

Within the Port of Los Angeles, the tunnel alignment would pass near Fire Station 40 and lodging associated with the Terminal Island Federal Prison on the way offshore to the SP Shelf. The offshore tunnel depth for Alternative 1 would range between 100 and 200 feet. The CEQA analysis for the offshore tunnel alignment is the same as for the onshore tunnel alignment. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

Construction activities associated with the operation of heavy equipment may generate localized groundborne vibration and noise in the vicinity of shaft sites. However, vibration from non-impact construction activities is typically below the threshold of perception when the activity is more than approximately 50 feet from vibration-sensitive receptor locations. Moreover, vibration from construction activities is a short-term effect that ends when construction is completed. Construction activities at the shaft sites are not anticipated to include high-impact activities. Where piles may be required, low-impact drilling techniques would be used. All vibration-sensitive receptor locations are located more than 50 feet from the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites. Therefore, vibration from construction activities at the shaft sites is not predicted to cause perceptible groundborne vibration and noise levels at receptor locations. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not expose persons to or generate excessive groundborne vibration or groundborne noise levels. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not expose persons to or generate excessive groundborne vibration or groundborne noise levels. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact NOI-4. Would Alternative 1 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Shaft Site – JWPCP East

Construction

CEQA Analysis

Noise monitoring data collected at the JWPCP East shaft site indicate that 52 dBA is the lowest noise L_{eq} at residences nearest to the shaft site when construction would take place (nighttime). The results shown in Table 14-19 indicate that residences located within 500 feet of the JWPCP East shaft site could be exposed to construction noise levels of 57 dBA or higher (an increase of 5 dB above the measured ambient level). Therefore, construction noise at the JWPCP East shaft site would result in a substantial increase in ambient noise levels at adjacent noise-sensitive land uses. Impacts would be significant. Implementation of MM NOI-4a and MM NOI-4b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – TraPac

Construction

CEQA Analysis

Noise monitoring data were collected at the LAXT shaft site, about 2 miles south of TraPac. The data indicate that 58 dBA is the lowest noise L_{eq} at residences nearest to the shaft site when construction would take place (during daytime hours). Shaft site access could occur during nighttime hours, during which the nighttime ambient noise level is 49 dBA L_{eq}. The results shown in Table 14-21 indicate that the nearest residences (located approximately 700 feet from the TraPac shaft site) could be exposed to construction noise levels of 61 dBA (less than 5 dB above the ambient level). Nighttime noise levels due to operation of a generator during shaft site access are predicted to be equal to or below the ambient noise level. A noise barrier would not be required at the TraPac shaft site to mitigate the increase in ambient noise levels resulting from construction or nighttime shaft site access. Therefore, construction noise at the TraPac shaft site would not result in a significant increase in ambient noise levels. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – LAXT

Construction

CEQA Analysis

Noise monitoring data collected at the LAXT shaft site indicate that 49 dBA is the lowest noise L_{eq} at locations nearest to the shaft site when construction would take place (nighttime). The nearest residential receptors are over 1 mile from the LAXT shaft site. However, Fire Station 40 is 100 feet away. Because firefighters sleep at the fire station, it is treated as a residence in this analysis. During construction, the exterior noise level is predicted to be 71 dBA at the fire station exterior with a noise barrier in place (an increase of 5 dB or more above the ambient level), as shown in Table 14-23. This is a substantial increase over the ambient level measured at the LAXT shaft site. Therefore, construction noise at the LAXT shaft site would result in a significant increase in ambient noise levels at adjacent noise-sensitive land uses. Impacts would be significant. Implementation of MM NOI-4a and MM NOI-4b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Southwest Marine

Construction

CEQA Analysis

Noise monitoring data were collected at the LAXT shaft site, about 1 mile northeast of the Southwest Marine shaft site. The data indicate that 58 dBA is the lowest noise L_{eq} at residences nearest to the shaft site when construction would take place (during daytime hours). Shaft site access could occur during nighttime hours, during which the nighttime ambient noise level is 49 dBA L_{eq}. The Terminal Island Federal Prison boundary is located approximately 200 feet from the Southwest Marine shaft site. The results shown in Table 14-25 indicate an exterior noise level of 66 dBA at this location with the noise barrier installed (an increase of less than 5 dB above the ambient daytime noise level). Fire Station 111 is 100 feet away. Nighttime noise levels due to operation of a generator during shaft site access are predicted to be approximately 60 dBA L_{eq} at this location, with the noise barrier installed (an increase of less than 5 dB above the ambient nighttime noise level). Therefore, construction or nighttime shaft site access at the Southwest Marine shaft site would result in a significant increase in ambient noise levels. Noise impacts resulting from construction or nighttime access at the Southwest Marine shaft site would be significant. Implementation of MM NOI-4a and MM NOI-4b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the JWPCP East, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM NOI-4a and MM NOI-4b.

Residual Impacts

MM NOI-4a and MM NOI-4b would reduce the significant impacts associated with construction at the JWPCP East, LAXT, and Southwest Marine shaft sites. The mitigation measures would reduce noise at sensitive receptors to below local standards. Therefore, residual impacts would be less than significant.

NEPA Impact Determination

Construction at the JWPCP East, LAXT, and Southwest Marine shaft sites for Alternative 1 (Project) would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM NOI-4a and MM NOI-4b.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

14.4.3.3 Impact Summary – Alternative 1

Impacts on terrestrial noise and vibrations analyzed in this EIR/EIS for Alternative 1 are summarized in Table 14-26 and Table 14-27. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 14-26. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact NOI-1. Would Alternative 1 (Program) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 14-26 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Biosolids Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact NOI-3. Would Alternative 1 (Program) result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			
JWPCP			
Biosolids Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact NOI-4. Would Alternative 1 (Program) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 14-26 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
SJCWRP			
Plant Expansion	CEQA Significant Impact During Construction	MM NOI-4a. Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following: ▪ Limit construction operations to exempt hours ▪ Locate equipment as far as practical from noise-sensitive uses ▪ Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation ▪ Prohibit gasoline or diesel engines from having unmuffled exhaust ▪ Use noise-reducing enclosures around noise-generating equipment ▪ Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission MM NOI-4b. Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.	CEQA Less Than Significant Impact During Construction
	CEQA Less than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Process Optimization	CEQA Significant Impact During Construction	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 14-26 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Biosolids Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 14-27. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact NOI-1. Would Alternative 1 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM NOI-1a (same as MM NOI-4a). Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following: ▪ Limit construction operations to exempt hours ▪ Locate equipment as far as practical from noise-sensitive uses ▪ Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation ▪ Prohibit gasoline or diesel engines from having unmuffled exhaust ▪ Use noise-reducing enclosures around noise-generating equipment ▪ Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission	CEQA Less Than Significant Impact During Construction

Table 14-27 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			MM NOI-1b (same as MM NOI-4b). Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.	
	NEPA Significant Impact During Construction	Indirect	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Significant Impact During Construction	N/A	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact During Construction
Impact NOI-2. Would Alternative 1 (Project) expose persons to or generate excessive groundborne vibration or groundborne noise levels?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 14-27 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact NOI-4. Would Alternative 1 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact During Construction

Table 14-27 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Significant Impact During Construction	N/A	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact During Construction

14.4.4 Alternative 2

14.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

14.4.4.2 Project

The impacts for the onshore tunnel and the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact NOI-2. Would Alternative 2 (Project) expose persons to or generate excessive groundborne vibration or groundborne noise levels?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

Within the Port of Los Angeles, the tunnel alignment would pass near Fire Station 40 and lodging associated with the Terminal Island Federal Prison on the way offshore to the SP Shelf.

Construction of the tunnel alignment could potentially cause groundborne vibration and noise in the immediate vicinity of the tunneling operations. Vibration sources include the TBM and haul trains shuttling equipment, materials, and construction workers between the JWPCP East and/or LAXT shaft

sites and the face of the tunnel. Construction vibrations would be intermittent and short-term, ceasing after tunneling work is complete.

As described in Section 14.4.1.4, groundborne vibration levels from operation of the TBM are anticipated to be below the impact threshold. Under Alternative 2, the tunnel crown depth would range between 100 and 250 feet bgs. For the IRP study, which was based on an average tunnel depth of 50 feet, groundborne vibration levels from the TBM were below the impact threshold. Therefore, impacts from TBM operations would be less than significant.

Groundborne vibrations and noise from the wheel-rail interface during haul train passbys would originate from the tunnel base rather than the tunnel crown, as in the case of TBM operations. The tunnel base would have a minimum depth of 120 feet under Alternative 2. As shown on Figure 14-1, passbys occurring at this depth would be below groundborne vibration and noise thresholds. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 2 (Project) would not expose persons to or generate excessive groundborne vibration or groundborne noise levels. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 2 (Project) would not expose persons to or generate excessive groundborne vibration or groundborne noise levels. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

14.4.4.3 Impact Summary – Alternative 2

Impacts on terrestrial noise and vibrations for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 14-26. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 14-28. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 14-28. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact NOI-1. Would Alternative 2 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM NOI-1a (same as MM NOI-4a). Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following: ▪ Limit construction operations to exempt hours ▪ Locate equipment as far as practical from noise-sensitive uses ▪ Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation ▪ Prohibit gasoline or diesel engines from having unmuffled exhaust ▪ Use noise-reducing enclosures around noise-generating equipment ▪ Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission	CEQA Less Than Significant Impact During Construction

Table 14-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			MM NOI-1b (same as MM NOI-4b). Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.	
	NEPA Significant Impact During Construction	Indirect	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Significant Impact During Construction	N/A	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b)	NEPA Less Than Significant Impact During Construction

Table 14-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact NOI-2. Would Alternative 2 (Project) expose persons to or generate excessive groundborne vibration or groundborne noise levels?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 14-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact NOI-4. Would Alternative 2 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				
Shaft Site				
JWPCP East	CEQA Significant Impact During Construction	N/A	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Significant Impact During Construction	N/A	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Significant Impact During Construction	N/A	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact During Construction

14.4.5 Alternative 3

14.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

14.4.5.2 Project

Impact NOI-1. Would Alternative 3 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

Shaft Site – JWPCP West

Construction

CEQA Analysis

The cities of Los Angeles and Carson ordinances for construction noise are both applicable to construction at the JWPCP West shaft site. The JWPCP West shaft site is a working shaft site, and construction activities would likely occur 10 to 24 hours a day. Therefore, daytime and nighttime noise standards apply.

Potential noise levels resulting from construction of the JWPCP West shaft site were evaluated by assigning utilization factors and quantities to pieces of equipment that would be used during shaft site and tunneling construction. These adjusted noise levels were then summed to calculate an overall L_{eq} noise level at the shaft site. These assumptions are summarized in Table 14-29.

Table 14-29. Construction Source Level Assumptions – JWPCP West

Equipment Type	Quantity	L_{max} Sound Level at 50 Feet (dBA)	Utilization Factor (percent)	L_{eq} Sound Level at 50 Feet (dBA)
Hydraulic Excavator – Large	1	85[a]	20	78
Hydraulic Excavator – Medium	1	85[a]	30	80
Motor Grader	1	85[a]	75	84
Loaders – Wheeled	2	85[b]	60	86
Crawler Crane	2	85[a]	25	82
Water Truck	1	84[a]	30	79
All Sources Combined				90

[a] Source: FTA 2006
[b] Source: Thalheimer 2000
L_{max} = maximum sound level
L_{eq} = equivalent sound level
dBA = A-weighted decibel

The combined noise level is 90 dBA L_{eq} at 50 feet. To reduce the neighborhood noise impacts, the Sanitation Districts are planning to construct noise barriers at the shaft site. Estimated sound levels from construction activities, including estimated noise barrier reduction, as a function of distance are shown in Table 14-30. Calculations are based on point-source attenuation over soft ground.

Table 14-30. Predicted Noise Levels From Construction Activities – JWPCP West Shaft Site

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level No Noise Barrier (dBA)	Estimated Barrier Noise Reduction (dB)	Calculated L_{eq} Sound Level With Noise Barrier (dBA)
50	90	14	76
100	82	11	71
200	74	9	65
300	70	8	62
400	66	7	59
500	64	7	57
600	62	7	55
700	60	7	53
800	59	6	53
900	57	6	51
1,000	56	6	50

Calculations are based on FTA 2006. Barrier noise reduction calculations are based on attenuation of construction noise sources with principal frequencies in the 125 to 500 Hz octave bands. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further. Noise barriers are assumed to have a height of 20 feet.

L_{eq} = equivalent sound level

dBA = A-weighted decibel

dB = decibel

There are several noise-sensitive receptors adjacent to the JWPCP West shaft site. The majority of the shaft site is located within the city of Los Angeles, with a small northern portion located in the city of Carson. The nearest noise-sensitive residential receptors are to the south in the city of Los Angeles, so the more restrictive city standards are used in this analysis. The closest residential receptors are 200 feet to the west across I-110, and are behind a 12-foot high noise wall relative to an elevated section of I-110 South. The next-closest residential neighborhood lies approximately 200 feet to the southeast. The Wilmington Athletic Complex and the Wilmington Boys and Girls Club lie just across Figueroa Street about 100 feet to the east. The nearest residential area in the city of Carson is about 1,800 feet from the shaft site.

The City of Los Angeles General Plan Noise Element states that the expected ambient noise level in residential areas during the nighttime is 40 dBA. The city's noise ordinance states that the expected ambient noise level in a given area may not be increased by more than 5 dB. If the measured baseline ambient noise level is greater than 40 dBA, the measured value should be used as the baseline.

Noise monitoring data collected at the JWPCP West shaft site indicate that 61 dBA is the lowest noise L_{eq} at residences nearest to the shaft site when construction would take place (nighttime). The city ordinance indicates that construction noise from the shaft site should not exceed this measured ambient level plus 5 dB, or 66 dBA L_{eq}. (Note that this noise standard essentially dictates that impact assessments discussed under Impact NOI-4 below are equivalent to those discussed here, for project elements located in the city of Los Angeles.)

The results shown in Table 14-30 indicate that residences located within 200 feet to the east and southeast of the JWPCP West shaft site could be exposed to construction noise levels of 65 dBA (less than 5 dB above the ambient level), with the noise barrier in place at the shaft site. Construction noise would not exceed city nighttime noise standards at nearby residences, or daytime noise standards at recreation areas to the east. Impacts would be less than significant, and no mitigation is required.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

The city of Los Angeles ordinance for construction noise is applicable to construction at the Angels Gate access shaft site. Construction of the Angels Gate shaft would only occur during daytime hours. However, access to the shaft during construction of the tunnel may be also required during nighttime hours.

Potential noise levels resulting from construction of the Angels Gate access shaft were evaluated by assigning utilization factors and quantities to pieces of equipment specified typically used during shaft and tunnel construction. These adjusted noise levels were then summed to calculate an overall L_{eq} noise level at the shaft site. These assumptions are summarized in Table 14-31.

Table 14-31. Construction Source Level Assumptions – Angels Gate Shaft Site

Equipment Type	Quantity	L_{max} Sound Level at 50 Feet (dBA)	Utilization Factor (percent)	L_{eq} Sound Level at 50 Feet (dBA)
Hydraulic Excavator – Large	1	85[a]	50	82
Hydraulic Excavator – Medium	1	85[a]	30	80
Motor Grader	1	85[a]	25	79
Loaders – Wheeled	2	85[b]	75	87
Crawler Crane	2	85[a]	50	85
Water Truck	1	84[a]	25	78
All Sources Combined				91

[a] Source: FTA 2006
[b] Source: Thalheimer 2000
L_{max} = maximum sound level
L_{eq} = equivalent sound level
dBA = A-weighted decibel

The combined noise level is 91 dBA L_{eq} at 50 feet. To reduce the neighborhood noise impacts, the Sanitation Districts are planning to construct noise barriers at the shaft site. Estimated sound levels from construction activities, including estimated noise barrier reduction, as a function of distance are shown in Table 14-32. Calculations are based on point-source attenuation over soft ground.

Table 14-32. Predicted Noise Levels From Construction Activities – Angels Gate Shaft Site

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level No Noise Barrier (dBA)	Estimated Barrier Noise Reduction (dB)	Calculated L_{eq} Sound Level With Noise Barrier (dBA)
50	91	14	77
100	83	11	72
120	81	11	70
140	79	11	68
160	78	10	68
200	75	9	66
275	71	8	63
400	67	7	60
500	65	7	58
600	63	7	56
700	61	7	54

Calculations are based on FTA 2006. Barrier noise reduction calculations are based on attenuation of construction noise sources with principal frequencies in the 125 to 500 Hz octave bands. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further. Noise barriers are assumed to have a height of 20 feet.

L_{eq} = equivalent sound level

dBA = A-weighted decibel

dB = decibel

The City of Los Angeles General Plan Noise Element states that the expected ambient noise level in residential areas during the day is 50 dBA. The city's noise ordinance states that the expected ambient noise level in a given area may not be increased by more than 5 dB. If the measured baseline ambient noise level is greater than 50 dBA, the measured value should be used as the baseline.

Noise monitoring data were collected at the Royal Palms shaft site, about 2 miles west of the Angels Gate shaft site. Ambient noise levels recorded at the Royal Palms shaft site are considered in this analysis to be representative of the coastal urban setting at Angels Gate. The noise monitoring data indicate that 58 dBA is the lowest noise L_{eq} at residences nearest to the shaft site when construction would take place (during daytime hours). The city ordinance indicates that construction noise from the shaft site should not exceed this measured ambient level plus 5 dB, or 63 dBA L_{eq}. During nighttime hours when access to the shaft may be required, the lowest level measured was also 58 dBA L_{eq} (same as the daytime ambient level). The city ordinance indicates that nighttime noise from generators at the shaft site should not exceed the measured ambient level plus 5 dB, or 63 dBA L_{eq}. (Note that this noise standard essentially dictates that impact assessments discussed under Impact NOI-4 are equivalent to those discussed here, for project elements located in the city of Los Angeles.)

The nearest residential receptors are in a densely populated neighborhood approximately 80 feet to the east across South Gaffey Street. Point Fermin Park is about 120 feet from the shaft site across West Paseo Del Mar to the south. The results shown in Table 14-32 indicate that residences and park uses located within a 275-foot radius of the Angels Gate shaft site would be exposed to construction noise levels of 63 dBA or more with the noise barrier installed at the shaft site (an increase of 5 dB above the ambient level). Therefore, construction noise would exceed city noise standards at nearby residences and at Point Fermin Park.

Nighttime shaft site access may require the use of a generator (assumed to have a rated output of 25 KVA or greater) to power ventilation equipment inside the tunnel. At a distance of 100 feet from the shaft site,

noise levels from the generator would be about 71 dBA L_{eq} without a noise barrier. With the noise barrier in place, this level would reduce to 60 dBA L_{eq}, which is less than the nighttime ambient noise level.

Although a noise barrier along the northern boundary of the shaft site would be necessary to reduce construction noise levels at residences northeast of the shaft site, it may not effectively reduce construction noise levels at recreational use areas at Angels Gate Park because the park is located more than 40 feet in elevation above the shaft site. Therefore, the no-noise-barrier levels in Table 14-32 more accurately describe the construction noise levels at the park, which could be exposed to construction noise levels of 63 dBA or more at a distance of 600 feet from the shaft site. Given the significant ground elevation difference, construction noise would likely only be audible at locations near the terrain edge of the park, where there is a direct line of sight to the shaft site, because of the acoustical shielding effects of the terrain edge. Impacts are considered to be significant. Implementation of MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b) would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) would expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b).

Residual Impacts

MM NOI-1a and MM NOI-1b would reduce the significant impacts associated with construction activities at the Angels Gate shaft site. The mitigation measures would reduce noise at sensitive receptors to below local standards. Therefore, residual impacts would be less than significant.

NEPA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) would expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b).

Residual Impacts

Residual impacts would be less than significant, as discussed under the CEQA impact determination.

Impact NOI-2. Would Alternative 3 (Project) expose persons to or generate excessive groundborne vibration or groundborne noise levels?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

The tunnel alignment under Alternative 3 follows the Figueroa Street and North Gaffey Street roadway alignments through mostly densely populated single- and multi-family residential areas. The tunnel would also pass near a school, overnight lodging, and commercial areas as it continues to the Angels Gate shaft site.

Construction of the tunnel alignment could potentially cause groundborne vibration and noise in the immediate vicinity of the tunneling operations. Vibration sources include the TBM and haul trains shuttling equipment, materials, and construction workers between the JWPCP West shaft site and the face of the tunnel. Construction vibrations would be intermittent and short-term, ceasing after tunneling work is complete.

As described in Section 14.4.1.4, groundborne vibration levels from operation of the TBM are anticipated to be below the impact threshold. Under Alternative 3, the tunnel crown depth would range between 70 and 370 feet bgs. For the IRP study, which was based on an average tunnel depth of 50 feet, groundborne vibration levels from the TBM were below the impact threshold. Therefore, impacts from TBM operations would be less than significant.

Groundborne vibrations and noise from the wheel-rail interface during haul train passbys would originate from the tunnel base rather than the tunnel crown, as in the case of TBM operations. The minimum tunnel base depth for Alternative 3 is approximately 90 feet. This is shallower than the 110-foot tunnel depth threshold for groundborne noise derived from the IRP study; therefore, a potential horizontal impact zone exists along the tunnel alignment where the tunnel depth at the base is less than 110 feet, as shown on Figure 14-4. At the minimum tunnel base depth of 90 feet, significant impacts due to groundborne noise could occur at sensitive receivers located within a horizontal distance of up to 63 feet from the tunnel centerline. This distance is referred to as the potential horizontal impact zone on Figure 14-2. As shown on Figure 14-1, the width of the impact zone varies as the tunnel depth changes along the alignment. Some commercial uses would be located within the potential horizontal impact zone for groundborne noise under Alternative 3. Therefore, impacts due to groundborne noise from haul train passbys would be considered significant. Implementation of MM NOI-2a and MM NOI-2b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

FIGURE 14-4

CLEARWATER Program

Alternative 3 Tunnel Depths (Less than 110 ft) With Potential Vibration Impacts Before Mitigation

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

There are no vibration-sensitive receptors located along the offshore alignment. Tunneling construction offshore would not cause detectable groundborne vibration or noise levels onshore. Impacts due to groundborne vibration and groundborne noise would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

Construction activities associated with the operation of heavy equipment may generate localized groundborne vibration and noise in the vicinity of shaft sites. However, vibration from non-impact construction activities is typically below the threshold of perception when the activity is more than approximately 50 feet from vibration-sensitive receptor locations. Moreover, vibration from construction activities is a short-term effect that ends when construction is completed. Construction activities at the shaft sites are not anticipated to include high-impact activities. Where piles may be required, low-impact drilling techniques would be used. All vibration-sensitive receptors are located more than 50 feet away from the JWPCP West and Angels Gate shaft sites. Therefore, vibration from construction activities at shaft sites is not predicted to cause perceptible groundborne vibration and noise levels at receptor locations. Impacts would be less than significant, and no mitigation is required.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the onshore tunnel for Alternative 3 (Project) would expose persons to or generate excessive groundborne vibration or groundborne noise levels. Impacts under CEQA would be significant before mitigation.

Mitigation

MM NOI-2a. Prepare and implement a rail maintenance plan for reducing groundborne noise caused by haul train activities. The plan will include routine inspection and maintenance of locomotives, especially those parts that affect the wheel/rail interface to ensure there are no open joints or discontinuities that would cause excessive noise at the wheel/rail interface.

MM NOI-2b. Prepare and implement a vibration control plan to reduce groundborne noise (and vibration) levels. The plan will ensure that groundborne noise levels from operation of locomotives do

not exceed the Federal Transit Administration Guidance Manual's threshold level of 45 dBA (A-weighted decibels). The plan may include measures such as the use of:

- Haul Train Speed Restrictions – Lower speed limits for haul trains operating within 110 diagonal feet of vibration-sensitive buildings
- Ballast Mats – A ballast mat consisting of a pad made of rubber or rubber-like material placed on an asphalt or concrete base with the normal ballast, ties, and rail on top
- Resilient Fasteners – Resilient fasteners for reducing the amount of vibration energy that is transferred into the track substructure and for minimizing groundborne vibration in frequencies above 30 hertz

Residual Impacts

MM NOI-2a and MM NOI-2b would reduce impacts associated with the construction of the onshore segment of the Figueroa/Gaffey to PV Shelf tunnel alignment. The rail maintenance plan would minimize groundborne noise levels associated with haul trains. The vibration control plan would be implemented in such a manner that compliance with the groundborne noise impact threshold of 45 dBA would be achieved. Residual impacts would be less than significant.

NEPA Impact Determination

Construction of the onshore tunnel for Alternative 3 (Project) would expose persons to or generate excessive groundborne vibration or groundborne noise levels. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM NOI-2a and MM NOI-2b.

Residual Impacts

Residual impacts would be less than significant, as discussed under the CEQA impact determination.

Impact NOI-4. Would Alternative 3 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Shaft Site – JWPCP West

Construction

CEQA Analysis

Noise monitoring data collected at the JWPCP West shaft site indicate that 61 dBA is the lowest noise L_{eq} at residences nearest to the shaft site when construction would take place (nighttime). The results shown in Table 14-30 indicate that residences located within 200 feet to the east and southeast of the JWPCP West shaft site could be exposed to construction noise levels of 65 dBA (less than 5 dB above the ambient level). Therefore, construction noise at the JWPCP West shaft site would not result in a significant increase in ambient noise levels at adjacent noise-sensitive land uses. Impacts would be less than significant, and no mitigation is required.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With

respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

Noise monitoring data collected at the Royal Palms shaft site indicate that 58 dBA is the lowest noise L_{eq} at residences nearest to the shaft site when construction would take place (daytime). Shaft site access could occur during nighttime hours, during which the nighttime ambient noise level is 58 dBA L_{eq} (same as daytime). Ambient noise levels recorded at the Royal Palms site are considered in this analysis as representative of the coastal urban setting at the Angels Gate shaft site. The results shown in Table 14-32 indicate that residences and park uses located within a 275-foot radius of the Angels Gate shaft site would be exposed to construction noise levels of 63 dBA or more with the noise barrier installed at the shaft site (an increase of 5 dB above the ambient level). Nighttime noise levels due to operation of a generator during shaft site access are predicted to be equal to or below the ambient noise level with the noise barrier in place. Therefore, construction noise at the Angels Gate shaft site would result in a significant increase in ambient noise levels at adjacent noise-sensitive land uses. However, as discussed under Impact NOI-1, due to the significant ground elevation difference of Angels Gate Park above noise sources at the shaft site, construction noise would likely be audible only at locations near the park's terrain edge. Under typical conditions, construction noise from the shaft site would not produce a noticeable increase in ambient noise levels at areas in Angels Gate Park that do not have a direct line of sight into the shaft site. Impacts are considered significant. Implementation of MM NOI-4a and MM NOI-4b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM NOI-4a and MM NOI-4b.

Residual Impacts

MM NOI-4a and MM NOI-4b would reduce the significant impacts associated with construction activities at the Angels Gate shaft site. The mitigation measures would reduce noise at sensitive receptors to below local standards. Therefore, residual impacts would be less than significant.

NEPA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
Implement MM NOI-4a and MM NOI-4b.

Residual Impacts
Residual impacts would be less than significant, as discussed under the CEQA impact determination.

14.4.5.3 Impact Summary – Alternative 3

Impacts on terrestrial noise and vibrations for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 14-26. Impacts analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 14-33. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 14-33. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact NOI-1. Would Alternative 3 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Significant Impact During Construction	N/A	MM NOI-1a (same as MM NOI-4a). Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following: ▪ Limit construction operations to exempt hours ▪ Locate equipment as far as practical from noise-sensitive uses ▪ Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation ▪ Prohibit gasoline or diesel engines from having unmuffled exhaust ▪ Use noise-reducing enclosures around noise-generating equipment ▪ Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission	CEQA Less Than Significant Impact During Construction

Table 14-33 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			MM NOI-1b (same as MM NOI-4b). Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.	
	NEPA Significant Impact During Construction	Indirect	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact During Construction
Impact NOI-2. Would Alternative 3 (Project) expose persons to or generate excessive groundborne vibration or groundborne noise levels?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Construction	N/A	MM NOI-2a. Prepare and implement a rail maintenance plan for reducing groundborne noise caused by haul train activities. The plan will include routine inspection and maintenance of locomotives, especially those parts that affect the wheel/rail interface to ensure there are no open joints or discontinuities that would cause excessive noise at the wheel/rail interface. MM NOI-2b. Prepare and implement a vibration control plan to reduce groundborne noise (and vibration) levels. The plan will ensure that groundborne noise levels from operation of locomotives do not exceed the Federal Transit Administration Guidance Manual's threshold level of 45 dBA (A-weighted decibels). The plan may include measures such as the use of: ▪ Haul Train Speed Restrictions – Lower speed limits for haul trains operating within 110 diagonal feet of vibration-sensitive buildings ▪ Ballast Mats – A ballast mat consisting of a pad made of rubber or rubber-like material placed on an asphalt or concrete base with the normal ballast, ties, and rail on top	CEQA Less Than Significant Impact During Construction

Table 14-33 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			▪ Resilient Fasteners – Resilient fasteners for reducing the amount of vibration energy that is transferred into the track substructure and for minimizing groundborne vibration in frequencies above 30 hertz	
	NEPA Significant Impact During Construction	Indirect	MM NOI-2a MM NOI-2b	NEPA Less Than Significant Impact During Construction
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact NOI-4. Would Alternative 3 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Significant Impact During Construction	N/A	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact During Construction

14.4.6 Alternative 4 (Recommended Alternative)

14.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

14.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years.

Impact NOI-1. Would Alternative 4 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?

Shaft Site – Royal Palms

Construction

CEQA Analysis

The city of Los Angeles ordinance for construction noise is applicable to construction at the Royal Palms exit shaft site. Shaft site construction would primarily take place during daytime hours; however, limited nighttime construction may occur during the connection of the onshore tunnel to the existing manifold structure.

Potential noise levels resulting from construction at the Royal Palms shaft site were evaluated by assigning utilization factors and quantities to pieces of equipment typically used during shaft site construction and the connection of the onshore tunnel to the existing manifold structure. These adjusted noise levels were then summed to calculate an overall L_{eq} noise level at the shaft site. These assumptions are summarized in Table 14-34.

Table 14-34. Construction Source Level Assumptions – Royal Palms Shaft Site

Equipment Type	Quantity	L_{max} Sound Level at 50 Feet (dBA)	Utilization Factor (percent)	L_{eq} Sound Level at 50 Feet (dBA)
Hydraulic Excavator – Large	1	85[a]	50	82
Hydraulic Excavator - Medium	1	85[a]	30	80
Motor Grader	1	85[a]	25	79
Loaders - Wheeled	2	85[b]	75	87
Crawler Crane	2	85[a]	50	85
Water Truck	1	84[a]	25	78
All Sources Combined				91

[a] Source: FTA 2006
[b] Source: Thalheimer 2000
L_{max} = maximum sound level
L_{eq} = equivalent sound level
dBA = A-weighted decibel

The combined noise level is 91 dBA L_{eq} at 50 feet. To reduce the neighborhood noise impacts, the Sanitation Districts are planning to construct noise barriers at the shaft site. Estimated sound levels from

construction activities, including estimated noise barrier reduction, as a function of distance are shown in Table 14-35. Calculations are based on point-source attenuation over soft ground.

Table 14-35. Predicted Noise Levels From Construction Activities – Royal Palms Shaft Site

Distance Between Source and Receiver (feet)	Calculated L_{eq} Sound Level No Noise Barrier (dBA)	Estimated Barrier Noise Reduction (dB)	Calculated L_{eq} Sound Level With Noise Barrier (dBA)
50	91	14	77
100	83	11	72
120	81	11	70
140	79	11	68
160	78	10	68
200	75	9	66
275	71	8	63
400	67	7	60
500	65	7	58
600	63	7	56
700	61	7	54

Calculations are based on FTA 2006. Barrier noise reduction calculations are based on attenuation of construction noise sources with principal frequencies in the 125 to 500 Hz octave bands. Calculations do not include the effects, if any, of local shielding from walls, topography, or other barriers that may reduce sound levels further. Noise barriers are assumed to have a height of 20 feet.

L_{eq} = equivalent sound level

dBA = A-weighted decibel

dB = decibel

The City of Los Angeles General Plan Noise Element states that the expected ambient noise level in residential areas during the nighttime hours is 40 dBA. The city's noise ordinance states that the expected ambient noise level in a given area may not be increased by more than 5 dB. If the measured baseline ambient noise level is greater than 40 dBA, the measured value should be used as the baseline.

Noise monitoring data collected at the Royal Palms shaft site indicate that 58 dBA is the lowest noise L_{eq} at residences nearest to the shaft site when construction would take place (during nighttime hours). The city ordinance indicates that construction noise from the shaft site should not exceed this measured ambient level plus 5 dB, or 63 dBA L_{eq}. (Note that this noise standard essentially dictates that impact assessments discussed under Impact NOI-4 are equivalent to those discussed here, for project elements located in the city of Los Angeles.)

The nearest residential receptors are situated on a bluff about 120 feet above the shaft site. Recreational use at Royal Palms Beach surrounds the site. The results shown in Table 14-35 indicate that recreational use at Royal Palms Beach within a 275-foot radius of the shaft site would be exposed to construction noise levels of 63 dBA or more (an increase of 5 dB above the ambient level).

While the shaft site noise barrier is needed to reduce noise in recreational use areas at Royal Palms Beach, a noise barrier along the northern boundary of the shaft site would likely not effectively reduce construction noise levels at the first row of properties that overlook the shaft site. Therefore, even with a noise barrier, the no-barrier levels in Table 14-35 more accurately describe the construction noise levels at the first row of residences, which could be exposed to construction noise levels of 63 dBA at a distance of 600 feet from the shaft site. Due to the substantial ground elevation difference of first-row residences above noise sources at the shaft site, construction noise would likely only be audible at locations near the terrain edge of the bluff where there is a direct line of sight to the shaft site, because of the acoustical

shielding effects of the terrain edge. Under typical conditions, construction noise from the shaft site would not produce a significant increase in overall ambient noise levels at residential areas north of Royal Palms Beach that do not have a direct line of sight into the shaft site. Nevertheless, construction noise would occasionally exceed city noise standards at nearby residences and recreational uses, and impacts would be significant. Implementation of MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b) would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the Royal Palms shaft site for Alternative 4 (Project) would expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b).

Residual Impacts

MM NOI-1a and MM NOI-1b would reduce the significant impacts associated with construction activities at the Royal Palms shaft site. The mitigation measures would reduce noise at sensitive receptors to below local standards. Therefore, residual impacts would be less than significant.

NEPA Impact Determination

Construction at the Royal Palms shaft site for Alternative 4 (Project) would expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM NOI-1a and MM NOI-1b (same as MM NOI-4a and MM NOI-4b).

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact NOI-2. Would Alternative 4 (Project) expose persons to or generate excessive groundborne vibration or groundborne noise levels?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

The tunnel alignment under Alternative 4 follows the Figueroa Street and North Gaffey Street roadway alignments through mostly densely populated single- and multi-family residential areas. The tunnel would also pass near a school, overnight lodging, and commercial areas as it continues to the Royal Palms shaft site.

Construction of the tunnel alignment could potentially cause groundborne vibration and noise in the immediate vicinity of the tunneling operations. Vibration sources include the TBM and haul trains shuttling equipment, materials, and construction workers between the JWPCP West shaft site and the face of the tunnel. Construction vibrations would be intermittent and short-term, ceasing after tunneling work is complete.

As described in Section 14.4.1.4, groundborne vibration levels from operation of the TBM are anticipated to be below the impact threshold. Under Alternative 4, the tunnel crown depth would range between 70 and 450 feet bgs. For the IRP study, which was based on an average tunnel depth of 50 feet, groundborne vibration levels from the TBM were below the impact threshold. Therefore, impacts from TBM operations would be less than significant.

Groundborne vibrations and noise from the wheel-rail interface during haul train passbys would originate from the tunnel base rather than the tunnel crown, as in the case of TBM operations. The minimum tunnel base depth for Alternative 4 is approximately 90 feet. This is shallower than the 110-foot tunnel depth threshold for groundborne noise derived from the IRP study; therefore, a potential horizontal impact zone exists along the tunnel alignment where the tunnel depth at the base is less than 110 feet, as shown on Figure 14-5. At the minimum tunnel base depth of 90 feet, significant impacts due to groundborne noise could occur at sensitive receivers located within a horizontal distance of up to 63 feet from the tunnel centerline. This distance is referred to as the potential horizontal impact zone on Figure 14-2. As shown on Figure 14-1, the width of the impact zone varies as the tunnel depth changes along the alignment. Some commercial uses and residential uses would be located within the potential horizontal impact zone for groundborne noise under Alternative 4. Therefore, impacts due to groundborne noise from haul train passbys would be considered significant. Implementation of MM NOI-2a and MM NOI-2b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis

Construction activities associated with the operation of heavy equipment may generate localized groundborne vibration and noise in the vicinity of shaft sites. However, vibration from non-impact construction activities is typically below the threshold of perception when the activity is more than about 50 feet from vibration-sensitive receptor locations. Moreover, vibration from construction activities is a short-term effect that ends when construction is completed. Construction activities at the shaft sites are not anticipated to include high-impact activities, such as pile driving or blasting. Where piles may be required, low-impact drilling techniques would be used. Vibration-sensitive receptors, including the residences located on the bluff above Royal Palms Beach, are located more than 50 feet away from the Royal Palms shaft site. Therefore, vibration from construction activities at this shaft site is not predicted to cause perceptible groundborne vibration and noise levels at receptor locations. Impacts would be less than significant, and no mitigation is required.

FIGURE 14-5

CLEARWATER Program

Alternative 4 Tunnel Depths (Less than 110 ft)
With Potential Vibration Impacts Before Mitigation

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of the onshore tunnel alignment for Alternative 4 (Project) would expose persons to or generate excessive groundborne vibration or groundborne noise levels. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM NOI-2a and MM NOI-2b.

Residual Impacts

MM NOI-2a and MM NOI-2b would reduce impacts associated with the construction of the Figueroa/Western to Royal Palms tunnel alignment. The rail maintenance plan would minimize groundborne noise levels associated with haul trains. The vibration control plan would be implemented in such a manner that compliance with local standards would be achieved. Residual impacts would be less than significant.

NEPA Impact Determination

Construction of the onshore tunnel alignment for Alternative 4 (Project) would expose persons to or generate excessive groundborne vibration or groundborne noise levels. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM NOI-2a and MM NOI-2b.

Residual Impacts

Residual impacts would be less than significant, as discussed under the CEQA impact determination.

Impact NOI-4. Would Alternative 4 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Shaft Site – Royal Palms

Construction

CEQA Analysis

Noise monitoring data collected at the Royal Palms shaft site indicates that 58 dBA L_{eq} is the lowest hourly ambient noise level measured during the 24-hour measurement period. The results shown in Table 14-35 indicate that park uses located within 275 feet of the Royal Palms State Beach shaft site could be exposed to construction noise levels of 63 dBA (an increase of 5 dB above the ambient level). Therefore, construction noise at the Royal Palms shaft site would result in a significant increase in ambient noise levels at adjacent noise-sensitive land uses including nearby residences and recreational uses. Impacts are considered significant. Implementation of MM NOI-4a and MM NOI-4b would reduce impacts to less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the Royal Palms shaft site for Alternative 4 (Project) would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM NOI-4a and MM NOI-4b.

Residual Impacts

MM NOI-4a and MM NOI-4b would reduce the significant impacts associated with construction activities at the Royal Palms shaft site. The mitigation measures would reduce noise at sensitive receptors to below local standards. Therefore, residual impacts would be less than significant.

NEPA Impact Determination

Construction at the Royal Palms shaft site for Alternative 4 (Project) would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM NOI-4a and MM NOI-4b.

Residual Impacts

Residual impacts would be less than significant, as discussed under the CEQA impact determination.

14.4.6.3 Impact Summary – Alternative 4

Impacts on terrestrial noise and vibrations for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 14-26. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 14-36. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 14-36. Impact Summary - Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact NOI-1. Would Alternative 4 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Significant Impact During Construction	N/A	MM NOI-1a (same as MM NOI-4a). Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following: ▪ Limit construction operations to exempt hours ▪ Locate equipment as far as practical from noise-sensitive uses ▪ Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation ▪ Prohibit gasoline or diesel engines from having unmuffled exhaust ▪ Use noise-reducing enclosures around noise-generating equipment ▪ Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission MM NOI-1b (same as MM NOI-4b). Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.	CEQA Less Than Significant Impact During Construction

Table 14-36 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Significant Impact During Construction	Indirect	MM NOI-1a (same as MM NOI-4a) MM NOI-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact During Construction
Impact NOI-2. Would Alternative 4 (Project) expose persons to or generate excessive groundborne vibration or groundborne noise levels?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Construction	N/A	MM NOI-2a. Prepare and implement a rail maintenance plan for reducing groundborne noise caused by haul train activities. The plan will include routine inspection and maintenance of locomotives, especially those parts that affect the wheel/rail interface to ensure there are no open joints or discontinuities that would cause excessive noise at the wheel/rail interface. MM NOI-2b. Prepare and implement a vibration control plan to reduce groundborne noise (and vibration) levels. The plan will ensure that groundborne noise levels from operation of locomotives do not exceed the Federal Transit Administration Guidance Manual's threshold level of 45 dBA (A-weighted decibels). The plan may include measures such as the use of: ▪ Haul Train Speed Restrictions – Lower speed limits for haul trains operating within 110 diagonal feet of vibration-sensitive buildings ▪ Ballast Mats – A ballast mat consisting of a pad made of rubber or rubber-like material placed on an asphalt or concrete base with the normal ballast, ties, and rail on top ▪ Resilient Fasteners – Resilient fasteners for reducing the amount of vibration energy that is transferred into the track substructure and for minimizing groundborne vibration in frequencies above 30 hertz	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-2a MM NOI-2b	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 14-36 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact NOI-4. Would Alternative 4 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Significant Impact During Construction	N/A	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact During Construction

14.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an EIR must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the water reclamation plants (WRPs), as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

14.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the SJCWRP, WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994).

14.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. The emergency discharges would not create any noise or vibrations. Therefore, terrestrial noise and vibration impacts would not occur under Alternative 5 (Project).

14.4.7.3 Impact Summary – Alternative 5

Terrestrial noise and vibrations impacts for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 14-26, excluding process optimization. Note that the mitigation measures for Alternatives 1 through 4 (Program) are not applicable to Alternative 5 (Program). There would be less than significant noise and vibrations impacts for Alternative 5 (Project).

14.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Section 3.4.1.6. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

14.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

14.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

14.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Impacts for Alternative 6 would be the same as discussed under Alternative 5 (Project); therefore, there would be no impacts for Alternative 6.

14.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on terrestrial noise and vibrations resulting from the construction and/or operation of program and/or project elements is provided in Table 14-37. Impacts are compared

by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 14-37. Comparison of Significant Impacts and Mitigation for Noise and Vibrations for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternatives 1, 2, 3, 4, and 5[a] (Program)			
Impact NOI-4. Would Alternatives 1, 2, 3, 4, and 5 (Program) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			
SJCWRP – Plant Expansion and Process Optimization	CEQA Significant Impact During Construction	MM NOI-4a. Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following: ▪ Limit construction operations to exempt hours ▪ Locate equipment as far as practical from noise-sensitive uses ▪ Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation ▪ Prohibit gasoline or diesel engines from having unmuffled exhaust ▪ Use noise-reducing enclosures around noise-generating equipment ▪ Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission MM NOI-4b. Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.	CEQA Less Than Significant Impact During Construction
	CEQA Significant Impact During Construction	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction

[a] Process optimization would not apply to Alternative 5 (Program). Additionally, all mitigation measures and residual impacts would not apply to Alternative 5 (Program).

Table 14-37 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 1 (Project)			
Impact NOI-1. Would Alternative 1 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?			
Shaft Sites – JWPCP East, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM NOI -1a (same as MM NOI-4a) MM NOI -1b (same as MM NOI-4b)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM NOI -1a (same as MM NOI-4a) MM NOI -1b (same as MM NOI-4b)	NEPA Less Than Significant Impact (Indirect) During Construction
Impact NOI-4. Would Alternative 1 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			
Shaft Sites – JWPCP East, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 2 (Project)			
Impact NOI-1. Would Alternative 2 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?			
Shaft Sites – JWPCP East, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM NOI -1a (same as MM NOI-4a) MM NOI -1b (same as MM NOI-4b)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM NOI -1a (same as MM NOI-4a) MM NOI -1b (same as MM NOI-4b)	NEPA Less Than Significant Impact (Indirect) During Construction
Impact NOI-4. Would Alternative 2 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			
Shaft Sites – JWPCP East, LAXT, Southwest Marine	CEQA Significant Impact During Construction	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 3 (Project)			
Impact NOI-1. Would Alternative 3 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?			
Shaft Site – Angels Gate	CEQA Significant Impact During Construction	MM NOI -1a (same as MM NOI-4a) MM NOI -1b (same as MM NOI-4b)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM NOI -1a (same as MM NOI-4a) MM NOI -1b (same as MM NOI-4b)	NEPA Less Than Significant Impact (Indirect) During Construction

Table 14-37 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact NOI-2. Would Alternative 3 (Project) expose persons to or generate excessive groundborne vibration or groundborne noise levels?			
Tunnel Alignment – Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Significant Impact During Construction	MM NOI-2a. Prepare and implement a rail maintenance plan for reducing groundborne noise caused by haul train activities. The plan will include routine inspection and maintenance of locomotives, especially those parts that affect the wheel/rail interface to ensure there are no open joints or discontinuities that would cause excessive noise at the wheel/rail interface. MM NOI-2b. Prepare and implement a vibration control plan to reduce groundborne noise (and vibration) levels. The plan will ensure that groundborne noise levels from operation of locomotives do not exceed the Federal Transit Administration Guidance Manual's threshold level of 45 dBA (A-weighted decibels). The plan may include measures such as the use of: ▪ Haul Train Speed Restrictions – Lower speed limits for haul trains operating within 110 diagonal feet of vibration-sensitive buildings ▪ Ballast Mats – A ballast mat consisting of a pad made of rubber or rubber-like material placed on an asphalt or concrete base with the normal ballast, ties, and rail on top ▪ Resilient Fasteners – Resilient fasteners for reducing the amount of vibration energy that is transferred into the track substructure and for minimizing groundborne vibration in frequencies above 30 hertz	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM NOI-2a MM NOI-2b	NEPA Less Than Significant Impact (Indirect) During Construction
Impact NOI-4. Would Alternative 3 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			
Shaft Site – Angels Gate	CEQA Significant Impact During Construction	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 4 (Project)			
Impact NOI-1. Would Alternative 4 (Project) expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?			
Shaft Site – Royal Palms	CEQA Significant Impact During Construction	MM NOI -1a (same as MM NOI-4a) MM NOI -1b (same as MM NOI-4b)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM NOI -1a (same as MM NOI-4a) MM NOI -1b (same as MM NOI-4b)	NEPA Less Than Significant Impact (Indirect) During Construction

Table 14-37 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Impact NOI-2. Would Alternative 4 (Project) expose persons to or generate excessive groundborne vibration or groundborne noise levels?			
Tunnel Alignment – Figueroa/ Western to Royal Palms (Onshore)	CEQA Significant Impact During Construction	MM NOI-2a MM NOI-2b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM NOI-2a MM NOI-2b	NEPA Less Than Significant Impact (Indirect) During Construction
Impact NOI-4. Would Alternative 4 (Project) result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			
Shaft Site – Royal Palms	CEQA Significant Impact During Construction	MM NOI-4a MM NOI-4b	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM NOI-4a MM NOI-4b	NEPA Less Than Significant Impact (Indirect) During Construction

Chapter 15
EMPLOYMENT, HOUSING, SOCIOECONOMICS, AND ENVIRONMENTAL JUSTICE

15.1 Introduction

This chapter provides the existing socioeconomic profile of the Joint Outfall System (JOS) service area and environmental justice issues that pertain to the Clearwater Program. This profile serves as the basis for analyzing the direct effects on population, employment, and housing that would result from implementation of the program and the project. Analysis of population and housing impacts is required by the California Environmental Quality Act (CEQA) (see Section 1.2.1). In addition, analysis of employment, socioeconomics, and environmental justice is required under the National Environmental Policy Act (NEPA) (see Section 1.2.2) and by Executive Order 12898 (see Section 15.3.1). Indirect or secondary effects are discussed in Chapter 21.

The analysis presented in this chapter is based on information provided by the United States (U.S.) Census, Southern California Association of Governments (SCAG), California Department of Finance (DOF), and the Employment Development Department (EDD). Additional information regarding the JOS service area's future population was developed by the Sanitation Districts of Los Angeles County (Sanitation Districts). It should be noted that, since comprehensive data from the U.S. Census 2010 for the Los Angeles regional area was not uniformly available until late 2011, this analysis is based on the U.S. Census 2000.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the employment and housing impact analysis for each program element is summarized by alternative in Table 15-1. As shown in the table, program-level impacts are discussed in the Preliminary Screening Analysis (Appendix 1-A) and, therefore, are not included in this chapter. Note that an evaluation of socioeconomics and environmental justice is not required for the program, which is outside the NEPA scope of analysis.

Table 15-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	-
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	-

Table 15-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	-
Biosolids Management	X	X	X	X	X	N/A	O	-
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project-level. See Table 15-2.	

[a] See Section 15.4.7 for a discussion of the No-Project Alternative.
[b] See Section 15.4.8 for a discussion of the No-Federal-Action Alternative.
WRP effluent management and biosolids management do not include construction.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the employment and housing impact analysis for each project element is summarized by alternative in Table 15-2.

Table 15-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	C,O
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	C,O
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	C,O
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	C,O
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	C,O
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	C,O
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	C,O	C,O

Table 15-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C,O
JWPCP West			X	X	N/A	N/A	C,O	C,O
TraPac	X	X			N/A	N/A	C,O	C,O
LAXT	X	X			N/A	N/A	C,O	C,O
Southwest Marine	X	X			N/A	N/A	C,O	C,O
Angels Gate			X		N/A	N/A	C,O	C,O
Royal Palms				X	N/A	N/A	C,O	C,O
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	C,O	C,O
PV Shelf		X	X		N/A	N/A	C,O	C,O
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	C,O

[a] See Section 15.4.7 for a discussion of the No-Project Alternative.
[b] See Section 15.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

15.2 Environmental Setting

15.2.1 Regional Setting

15.2.1.1 Population and Housing

Population characteristics within the region are summarized in Table 15-3. Total population in the county of Los Angeles, as reported in the U.S. Census 2000, was 9,519,338 persons. Of the total population, White persons composed the largest racial group, at 48.7 percent. Persons identified as “other race” composed the next largest group at 23.5 percent. The remaining 27.8 percent (in order of descending proportions) were Asian, Black or African American, Multi-racial, Native American, and Native Hawaiian/Pacific Islander. Of these racial groups, 44.6 percent identified themselves as Hispanic or Latino. For Los Angeles County, 28.0 percent of the population was under 18 years of age in 2000, while 9.7 percent was over 65 years of age. Demographic data from the SCAG 2008 Regional Transportation Plan (RTP) indicate that the county of Los Angeles is projected to have a population of 12,337,153 residents in 2035, an increase of approximately 29.6 percent from 2000. The intermediary growth trends for the county are summarized in Table 15-3.

Total population in the JOS service area, as reported in the U.S. Census 2000, was 5,121,092 persons. Of the total population, White persons composed the largest racial group, at 43.6 percent. Persons identified as “other race” composed the next largest group at 25.3 percent. The remaining 31.1 percent (in order of descending proportions) were Asian, Black or African American, Multi-racial, Native American, and Native Hawaiian and Other Pacific Islander. Of these racial groups, 48.5 percent identified themselves as Hispanic or Latino. For the JOS service area, the age characteristics of the population are similar to the county, as 29.8 percent of the population was under 18 years of age in 2000, while 9.6 percent was over

65 years of age. Demographic data from the SCAG 2008 RTP indicate that the JOS service area is projected to have a population of 6,380,894 residents in 2035, an increase of approximately 24.6 percent from 2000. The intermediary growth trends for the county are summarized in Table 15-3.

Table 15-3. Existing and Projected Regional Characteristics

	Los Angeles County	JOS Service Area
Population and Projected Growth		
Total Population 2000	9,519,338	5,121,092
Total Population 2010	10,614,026	5,627,306
Growth (2000-2010)	11.5%	9.9%
Projected Population 2020	11,328,214	5,942,368
Growth (2010-2020)	6.7%	5.6%
Projected Population 2030	12,014,385	6,240,826
Growth (2020-2030)	6.1%	5.0%
Projected Population 2035	12,337,153	6,380,894
Growth (2030-2035)	2.7%	2.2%
Ethnicity (2000)		
Hispanic or Latino	44.6%	48.5%
Not Hispanic or Latino	55.4%	51.5%
Percentage Racial Distribution (2000)		
White	48.7%	43.6%
Black or African American	9.8%	11.3%
American Indian and Alaska Native	0.8%	0.9%
Asian	11.9%	13.9%
Native Hawaiian and Other Pacific Islander	0.3%	0.4%
Some Other Race	23.5%	25.3%
Two or More Races	4.9%	4.6%
Percentage Age Distribution (2000)		
Under 5	7.7%	8.1%
5 Through 17	20.3%	21.7%
18 Through 64	62.2%	60.6%
65 and Over	9.7%	9.6%

Year 2000 information is from the U.S. Census 2000, while the future years' (2010, 2020, 2030, and 2035) projections have been taken from RTP 2008 prepared by SCAG.
Source: U.S. Census 2000a, Summary File 1 and SCAG 2008

The existing and future housing characteristics within the county are summarized in Table 15-4. According to the U.S. Census 2000, the total number of housing units in the county was 3,270,909 of which 56.1 percent comprised single-family units, 42.2 percent comprised multi-family units, and the remaining 1.7 percent was classified as other. Of the total housing units in the county, 95.8 percent were occupied and 4.2 percent were vacant. Of the total occupied housing units, 47.9 percent were owner-occupied and 52.1 percent were rented. The number of households within the county was 3,133,774 and is expected to increase by 27.7 percent in 2035. The intermediary projected growth trends for households are also provided in Table 15-4.

As shown in Table 15-4, the total number of housing units within the JOS service area was 1,628,543 of which 65.3 percent comprised single-family units, 32.6 percent comprised multi-family units, and the remaining 2.1 percent was classified as other. Of the total housing units in the JOS service area, 96.4 percent were occupied and 3.6 percent were vacant. Of the total occupied housing units, 53.8 percent were owner-occupied and 46.2 percent were rented. The county proportions for owner-occupied units were lower than those for the JOS service area. The number of households in 2035 for the JOS service area is projected to be 1,874,784 households, an increase of approximately 19.5 percent over 2000.

Table 15-4. Existing and Projected Regional Housing Characteristics

	Los Angeles County	JOS Service Area
Households and Projected Growth		
Total Households in 2000	3,133,774	1,569,417
Projected Households in 2010	3,356,962	1,645,541
Growth (2000-2010)	7.1%	4.9%
Projected Households in 2020	3,665,749	1,756,900
Growth (2010-2020)	9.2%	6.8%
Projected Households in 2030	3,905,933	1,841,175
Growth (2020-2030)	6.6%	4.8%
Projected Households in 2035	4,002,571	1,874,784
Growth (2030-2035)	2.5%	1.8%
Average Household Size (2000)	2.98	3.26
Housing and Housing Characteristics (2000)		
Total Housing Units in 2000	3,270,909	1,628,543
Occupancy Status		
Occupied Units	95.8%	96.4%
Vacant Units	4.2%	3.6%
Tenancy Status		
Owner Occupied	47.9%	53.8%
Renter Occupied	52.1%	46.2%
Type of Housing		
Single Units	56.1%	65.3%
Multiple Unit	42.2%	32.6%
Other Housing Unit	1.7%	2.1%

Year 2000 information is from U.S. Census 2000, while the future years' (2010, 2020, 2030, and 2035) projections have been taken from RTP 2008 prepared by SCAG.
Source: U.S. Census 2000a, Summary File 1 and U.S. Census 2000b, Summary File 3, and SCAG 2008

15.2.1.2 Employment

The employment data and breakdown of employment by industry are summarized in Table 15-5. As per the U.S. Census 2000, Los Angeles County had 3,953,415 jobs and an unemployment rate of 8.2 percent. However, the recent economic downturn is likely to have had negative effects upon regional employment rates. The most recent available unemployment data from the California EDD confirm this trend,

showing an unemployment rate of 12.0 percent for the county as of January 2010 (California EDD 2010). According to the SCAG 2008 RTP, the employment for the county is projected to increase to 5,064,786, an increase of 28.1 percent from 2005. The majority of the employed workers in the county are working in the service sector (44.1 percent), followed by 14.8 percent workers working in manufacturing, and 10.6 percent workers employed in retail trade.

As shown in Table 15-5, the JOS service area had an employment of 2,054,327 in 2000. The unemployment rate in the JOS service area was similar to the county at 8.0 percent. According to the SCAG projections, the employment for the JOS service area is projected to increase to 2,406,773, an increase of 17.2 percent from 2005. Following similar trends as the county, the majority of the employed workers in the JOS service area are working in the service sector (41.8 percent), followed by 17.2 percent workers working in manufacturing, and 10.65 percent workers employed in retail trade.

Table 15-5. Existing and Projected Employment and Break Down of Industry

	Los Angeles County	JOS Service Area
Employment and Projected Growth		
Total Employment in 2000	3,953,415	2,054,327
Unemployment Rate (2000)	8.2%	8.0%
Projected Employment in 2005[a]	4,390,491	2,165,864
Projected Employment in 2010	4,588,394	2,238,616
Growth (2005-2010)	4.5%	3.4%
Projected Employment in 2020	4,781,152	2,303,375
Growth (2010-2020)	4.2%	2.9%
Projected Employment in 2030	4,971,380	2,372,246
Growth (2020-2030)	4.0%	3.0%
Projected Employment in 2035	5,064,786	2,406,773
Growth (2030-2035)	1.9%	1.5%
Employment by Industry (2000)		
Agriculture	0.2%	0.2%
Mining	0.1%	0.1%
Construction	5.1%	5.0%
Manufacturing	14.8%	17.2%
Utilities	5.0%	6.2%
Wholesale Trade	4.7%	5.5%
Retail Trade	10.5%	10.6%
Information	5.4%	3.3%
Finance, Insurance, and Real Estate	6.9%	6.4%
Service	44.1%	41.8%
Government	3.2%	3.7%

Year 2000 information is from U.S. Census 2000, while the future years' (2005, 2010, 2020, 2030, and 2035) projections are from RTP 2008 prepared by SCAG.

[a] Year 2000 employment information from U.S. Census 2000 provides employed persons residing in the geography, while SCAG projections provide actual number of jobs within the geography. Hence, there is a decrease in numbers from 2000 to 2005 for some geographic regions. This is also the reason why the 2005 numbers are projections as they are SCAG data and need to be compared with 2035 data.

Source: U.S. Census 2000a, Summary File 1 and U.S. Census 2000b, Summary File 3, and SCAG 2008

15.2.1.3 Income and Poverty Status

Census tract level data was used to determine the income and poverty characteristics for the population and housing study area, and is summarized in Table 15-6. The per capita income for Los Angeles County ($20,683) is higher than that of the JOS service area's per capita income ($19,501). The percentage of persons below the poverty threshold in Los Angeles County (17.9 percent) is slightly higher than the percentage in the JOS service area (16.9 percent). (Note: The 1999 poverty threshold used for the 2000 U.S. data, as defined by the U.S. Census Bureau, was $8,501 for an individual and $17,029 for a family of four. The 2009 poverty threshold according to the U.S. Department of Health and Human Services is $10,830 for individuals, or $22,050 for a family of four.)

Table 15-6. Poverty and Income (1999)

Location	Population for Whom Poverty Status Is Determined	Persons Below Poverty Threshold (1999)	Percent Below Poverty Threshold	Per Capita Income
Los Angeles County	9,349,771	1,674,599	17.9%	$20,683
JOS Service Area	5,044,947	853,387	16.9%	$19,501

Source: U.S. Census 2000a, Summary File 1 and U.S. Census 2000b, Summary File 3

15.2.2 Program Setting

The program would result in less than significant impacts on employment and housing. Refer to the Preliminary Screening Analysis for more detail. Additionally, an evaluation of socioeconomics and environmental justice is not required for the program, which is outside the NEPA scope of analysis. Therefore, the program is not included in this chapter.

15.2.3 Project Setting

15.2.3.1 Tunnel Alignment

Wilmington to San Pedro Shelf and Wilmington to Palos Verdes Shelf Alignments

Both the Wilmington to SP Shelf and Wilmington to PV Shelf tunnel alignments are generally within the same population and housing study area. The population and housing study area consists of census tracts adjacent to the alignment. As shown of Figure 15-1, the adjacent census tracts are 2942.00, 2943.00, 2945.10, 2948.10, 2948.30, 2949.00, 2961.00, 2971.20, 2976.00, 5436.04, and 5437.03. This study area is referred to as the Wilmington tunnel alignment study area. It should be noted that for this chapter, the offshore portion of the tunnel alignment from the TraPac shaft site to the Southwest Marine shaft site is included as part of the onshore tunnel alignment analysis for environmental justice (see Section 15.4.3.2).

Population and Housing

Population characteristics for the study area are summarized in Table 15-7. Total population in the Wilmington tunnel alignment study area, as reported in the U.S. Census 2000, was 46,468 persons. Of the total population, White persons composed the largest racial group, at 42.2 percent. Persons identified as "Some Other Race" composed the next largest group at 35.8 percent. The remaining 22.0 percent (in order of descending proportions) were Asian, Multi-racial, Black or African American, American Indian and Alaska Native, and Native Hawaiian and Other Pacific Islander. Of these racial groups, 65.1 percent identified themselves as Hispanic or Latino. For the Wilmington tunnel alignment study area, 31.4 percent of the population was under 18 years of age in 2000, while 7.2 percent was over 65 years of age. Demographic data from the SCAG 2008 RTP indicate that the study area is projected to have a

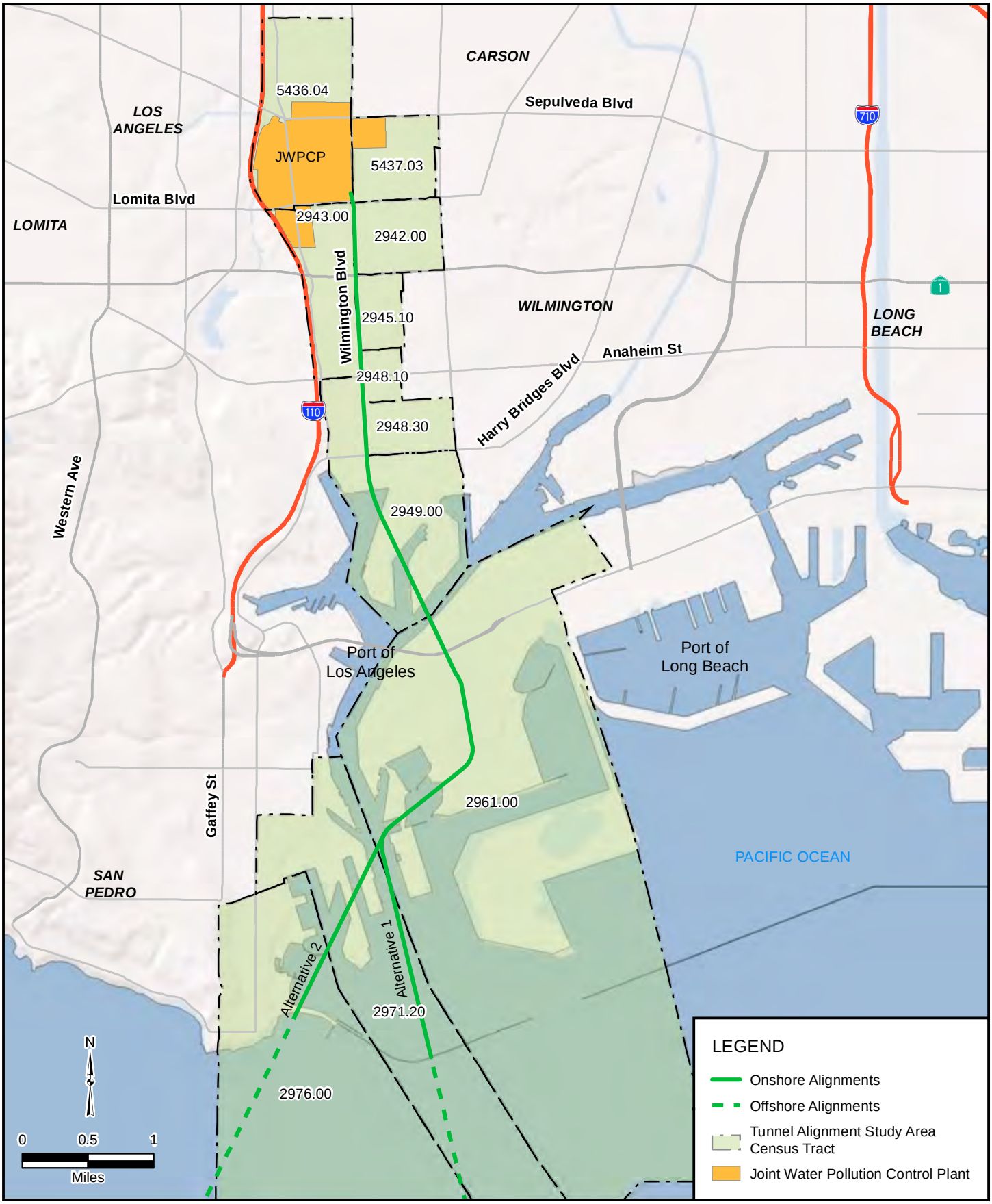


FIGURE 15-1

CLEARWATER Program

Wilmington Tunnel Alignment Study Area

Source: Sanitation Districts of Los Angeles County 2011, US Census 2000, Thomas Bros. 2011, ESRI 2011

population of 56,191 residents in 2035, an increase of approximately 20.9 percent from 2000. The intermediary growth trends for the county are summarized in Table 15-3.

Housing characteristics for the study area are summarized in Table 15-8. The total number of housing units within the Wilmington alignment study area was 7,762 of which 57.5 percent comprised single-family units, 40.4 percent comprised multi-family units, and the remaining 2.1 percent was classified as other. Of the total housing units in the study area, 94.2 percent were occupied and 5.8 percent were vacant. Of the total occupied housing units, 45.0 percent were owner-occupied and 55.0 percent were rented. The proportion of owner-occupied units in the Wilmington tunnel alignment study area is lower than in the county (Table 15-4 and Table 15-8). The number of households in 2035 for the Wilmington tunnel alignment study area is projected to be 9,151 households, an increase of approximately 25.2 percent over 2000.

Employment

Employment characteristics for the study area are summarized in Table 15-9. The study area had 17,572 jobs and an unemployment rate of 9.0 percent in 2000. According to the SCAG 2008 RTP, employment for the study area is projected to increase to 13,234, an increase of only 11.7 percent from 2005 projections. The majority of the employed workers in the study area are working in the service sector (37.8 percent), followed by 21.5 percent workers working in manufacturing, and 8.9 percent workers employed in retail trade and utilities sectors.

Income and Poverty Status

Income and poverty data for the study area are summarized in Table 15-10. Per capita income for the Wilmington tunnel alignment study area ($12,371) was less than the county's per capita income ($20,683) (Table 15-6). The percentage of persons below the poverty threshold for the Wilmington tunnel alignment study area (21.5 percent) was higher than that for the JOS service area and Los Angeles County.

Table 15-7. Existing and Projected Regional and Local Population Characteristics for Project

	Tunnel Alignment Study Area			Shaft Site Study Area				
	Wilmington	Figueroa/ Gaffey to PV Shelf	Figueroa/ Western to Royal Palms	JWPCP East and JWPCP West	TraPac	LAXT and Southwest Marine	Angels Gate	Royal Palms
Population and Projected Growth								
Total Population 2000	46,468	55,010	44,919	5,162	3,262	1,434	3,324	6,501
Total Population 2010	51,349	60,209	49,330	5,892	3,603	1,403	3,630	7,258
Growth (2000-2010)	10.5%	9.5%	9.8%	14.1%	10.5%	-2.2%	9.2%	11.6%
Projected Population 2020	53,321	62,251	50,727	6,253	3,727	1,441	3,759	7,507
Growth (2010-2020)	3.8%	3.4%	2.8%	6.1%	3.4%	2.7%	3.6%	3.4%
Projected Population 2030	55,273	64,266	52,109	6,598	3,850	1,498	3,887	7,754
Growth (2020-2030)	3.7%	3.2%	2.7%	5.5%	3.3%	4.0%	3.4%	3.3%
Projected Population 2035	56,191	65,210	52,755	6,760	3,907	1,528	3,948	7,869
Growth (2030-2035)	1.7%	1.5%	1.2%	2.5%	1.5%	2.0%	1.6%	1.5%
Ethnicity (2000)								
Hispanic or Latino	65.1%	47.0%	33.7%	34.7%	86.6%	37.9%	17.5%	12.5%
Not Hispanic or Latino	34.9%	53.0%	66.3%	65.3%	23.4%	62.1%	82.5%	87.5%
Percentage Racial Distribution (2000)								
White	42.2%	58.0%	68.6%	27.6%	31.9%	45.9%	79.8%	85.1%
Black or African American	5.0%	6.2%	4.2%	4.3%	5.8%	23.9%	3.1%	2.7%
American Indian and Alaska Native	1.0%	1.1%	0.8%	0.2%	1.1%	1.4%	0.8%	0.5%
Asian	9.0%	5.1%	6.7%	42.3%	2.2%	2.8%	5.1%	4.1%
Native Hawaiian and Other Pacific Islander	1.1%	0.6%	0.5%	2.6%	1.1%	0.8%	0.0%	0.2%
Some other race	35.8%	22.4%	14.4%	17.8%	51.7%	21.1%	5.8%	3.4%
Two or more races	5.9%	6.5%	4.8%	5.1%	6.1%	4.1%	5.4%	4.0%
Percentage Age Distribution (2000)								
Under 5	8.8%	8.0%	6.5%	5.8%	11.2%	0.9%	5.8%	6.0%
5 through 17	22.6%	19.5%	17.2%	19.7%	30.7%	4.3%	14.0%	13.9%
18 through 64	61.4%	62.9%	61.5%	62.9%	53.1%	90.8%	62.0%	57.3%
65 and Over	7.2%	9.6%	14.7%	11.6%	5.0%	4.0%	18.2%	22.7%

Year 2000 information is from U.S. Census 2000, while the future years' (2010, 2020, 2030, and 2035) projections have been taken from RTP 2008 prepared by SCAG.
Source: U.S. Census 2000a, Summary File 1, and SCAG 2008

Table 15-8. Existing and Projected Regional and Local Housing Characteristics for Project

	Tunnel Alignment Study Area			Shaft Site Study Area				
	Wilmington	Figueroa/ Gaffey to PV Shelf	Figueroa/ Western to Royal Palms	JWPCP East and JWPCP West	TraPac	LAXT and Southwest Marine	Angels Gate	Royal Palms
Households and Projected Growth								
Total Households in 2000	7,308	12,567	7,422	3,187	815	159	1,382	2,648
Projected Households in 2010	7,802	13,372	7,787	3,415	875	105	1,461	2,859
Growth (2000-2010)	6.8%	6.4%	4.9%	7.2%	7.4%	-34.0%	5.7%	8.0%
Projected Households in 2020	8,442	14,481	8,175	3,684	945	118	1,566	3,053
Growth (2010-2020)	8.2%	8.3%	5.0%	7.9%	8.0%	12.4%	7.2%	6.8%
Projected Households in 2030	8,948	15,361	8,476	3,893	1,000	128	1,649	3,203
Growth (2020-2030)	6.0%	6.1%	3.7%	5.7%	5.8%	8.5%	5.3%	4.9%
Projected Households in 2035	9,151	15,716	8,599	3,977	1,022	132	1,682	3,264
Growth (2030-2035)	2.3%	2.3%	1.5%	2.2%	2.2%	3.1%	2.0%	1.9%
Average Household Size (2000)	3.50	2.70	2.70	1.62	3.99	2.03	2.33	2.46
Housing and Housing Characteristics (2000)								
Total Housing Units in 2000	7,762	13,188	7,649	3,306	839	253	1,436	2,737
Occupancy Status								
Occupied Units	94.2%	95.3%	97.0%	96.4%	97.1%	62.8%	96.2%	96.7%
Vacant Units	5.8%	4.7%	3.0%	3.6%	2.9%	37.2%	3.8%	3.3%
Tenancy Status								
Owner Occupied	45.0%	29.8%	74.5%	67.9%	24.9%	60.4%	63.5%	78.0%
Renter Occupied	55.0%	70.2%	25.5%	32.1%	75.1%	39.6%	36.5%	22.0%
Type of Housing								
Single Units	57.5%	46.6%	67.1%	76.1%	39.1%	28.3%	68.2%	77.0%
Multiple Unit	40.4%	52.6%	30.0%	20.5%	60.9%	16.0%	31.8%	14.4%
Other Housing Unit	2.1%	0.8%	2.9%	3.4%	0.0%	55.7%	0.0%	8.6%

Year 2000 information is from U.S. Census 2000, while the future years' (2010, 2020, 2030, and 2035) projections have been taken from RTP 2008 prepared by SCAG.
Source: U.S. Census 2000a, Summary File 1 and U.S. Census 2000b, Summary File 3, and SCAG 2008

Table 15-9. Existing and Projected Employment by Industry for Project

	Tunnel Alignment Study Area			Shaft Site Study Area				
	Wilmington	Figueroa/ Gaffey to PV Shelf	Figueroa/ Western to Royal Palms	JWPCP East and JWPCP West	TraPac	LAXT and Southwest Marine	Angels Gate	Royal Palms
Employment and Projected Growth								
Total Employment in 2000	17,572	24,246	20,765	4,776	909	56	1,715	3,189
Unemployment Rate (2000)	9.0%	7.3%	5.3%	8.0%	15.5%	21.1%	5.3%	3.0%
Projected Employment in 2005	11,846	11,449	11,032	1,409	4,449	631	855	729
Projected Employment in 2010	12,185	11,847	11,346	1,440	4,526	657	875	788
Growth (2005-2010)	2.9%	3.5%	2.8%	2.2%	1.7%	4.1%	2.3%	8.1%
Projected Employment in 2020	12,622	12,365	11,756	1,481	4,627	691	900	865
Growth (2010-2020)	3.6%	4.4%	3.6%	2.8%	2.2%	5.2%	2.9%	9.8%
Projected Employment in 2030	13,033	12,854	12,142	1,520	4,724	723	922	938
Growth (2020-2030)	3.3%	4.0%	3.3%	2.6%	2.1%	4.6%	2.4%	8.4%
Projected Employment in 2035	13,234	13,093	12,331	1,539	4,771	738	933	974
Growth (2030-2035)	1.5%	1.9%	1.6%	1.3%	1.0%	2.1%	1.2%	3.8%
Employment by Industry (2000)								
Agriculture	0.7%	0.5%	0.3%	0.6%	0.0%	0.0%	0.4%	0.7%
Mining	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Construction	6.8%	6.1%	4.6%	6.6%	9.7%	0.0%	4.7%	4.3%
Manufacturing	21.5%	15.2%	14.4%	22.2%	31.6%	0.0%	9.5%	8.1%
Utilities	8.9%	11.1%	12.2%	8.6%	4.1%	0.0%	12.7%	14.3%
Wholesale Trade	5.0%	4.2%	4.6%	5.5%	3.0%	0.0%	4.0%	5.6%
Retail Trade	8.9%	9.8%	9.6%	10.2%	8.4%	32.1%	8.0%	8.0%
Information	2.4%	2.4%	2.9%	3.1%	2.2%	0.0%	4.7%	3.2%
Finance, Insurance, and Real Estate	4.0%	5.5%	6.1%	3.4%	1.0%	33.9%	3.8%	7.6%
Service	37.8%	40.7%	41.2%	36.8%	40.2%	33.9%	46.2%	42.9%
Government	3.6%	4.4%	4.1%	2.9%	0.0%	0.0%	6.0%	5.5%

Year 2000 information is from U.S. Census 2000, while the future years' (2005, 2010, 2020, 2030, and 2035) projections are from RTP 2008 prepared by SCAG.
Source: U.S. Census 2000a, Summary File 1 and U.S. Census 2000b, Summary File 3, and SCAG 2008

Table 15-10. Poverty and Income (1999) for Project

Study Area	Population for Whom Poverty Status Is Determined	Persons Below Poverty Threshold (1999)	Percent Below Poverty Threshold	Per Capita Income
Tunnel Alignment (Onshore)				
Wilmington	44,910	9,655	21.5%	$12,731
Figueroa/Gaffey to PV Shelf	54,432	9,530	17.5%	$20,356
Figueroa/Western to Royal Palms	44,703	4,635	10.4%	$26,537
Shaft Site				
JWPCP East and JWPCP West	12,152	1,945	16.0%	$15,319
TraPac	3,262	1,343	41.2%	$8,087
LAXT and Southwest Marine	155	48	31.0%	$7,639
Angels Gate	3,243	229	7.1%	$32,307
Royal Palms	6,559	264	4.0%	$35,058

Source: U.S. Census 2000a, Summary File 1 and U.S. Census 2000b, Summary File 3

Figueroa/Gaffey to Palos Verdes Shelf Alignment

The study area for the Figueroa/Gaffey to PV Shelf tunnel alignment consists of the U.S. Census tracts adjacent to the alignment. As shown on Figure 15-2, the adjacent census tracts are 2943.00, 2949.00, 2951.01, 2963.00, 2965.00, 2966.00, 2969.00, 2972.00, 2975.00, and 2976.00.

Population and Housing

As shown in Table 15-7, the total population of the Figueroa/Gaffey to PV Shelf tunnel alignment study area, as reported in the U.S. Census 2000, was 55,010 persons. Of the total population, White persons composed the largest racial group, at 58.0 percent. Persons identified as “Some Other Race” composed the next largest group at 22.4 percent. The remaining 19.6 percent (in order of descending proportions) were Multi-racial, Black or African American, Asian, American Indian and Alaska Native, and Native Hawaiian and Other Pacific Islander. Of these racial groups, 47.0 percent identified themselves as Hispanic or Latino. For the study area, 27.5 percent of the population was under 18 years of age in 2000, while 9.6 percent was over 65 years of age. Demographic data from the SCAG 2008 RTP indicate that the study area is projected to have a population of 65,210 residents in 2035, an increase of approximately 18.5 percent from 2000. The intermediary growth trends for the county are summarized in Table 15-3.

As shown in Table 15-8, the total number of housing units within the Figueroa/Gaffey to PV Shelf tunnel alignment study area was 13,188 of which 46.6 percent comprised single-family units, 52.6 percent comprised multi-family units, and the remaining 0.8 percent was classified as other. Of the total housing units in the study area, 95.3 percent were occupied and 4.7 percent were vacant. Of the total occupied housing units, 29.8 percent were owner-occupied and 70.2 percent were rented. The proportion for owner-occupied units in the study area is substantially lower than that of the county (Table 15-4 and Table 15-8). The number of households in 2035 for the study area is projected to be 15,716 households, an increase of approximately 25.1 percent over 2000.

Employment

As summarized in Table 15-9, the Figueroa/Gaffey to PV Shelf tunnel alignment study area had 24,246 jobs and an unemployment rate of 7.3 percent in 2000. According to the SCAG 2008 RTP, the employment for the study area is projected to increase to 13,093 by 2035, an increase of only 14.3 percent

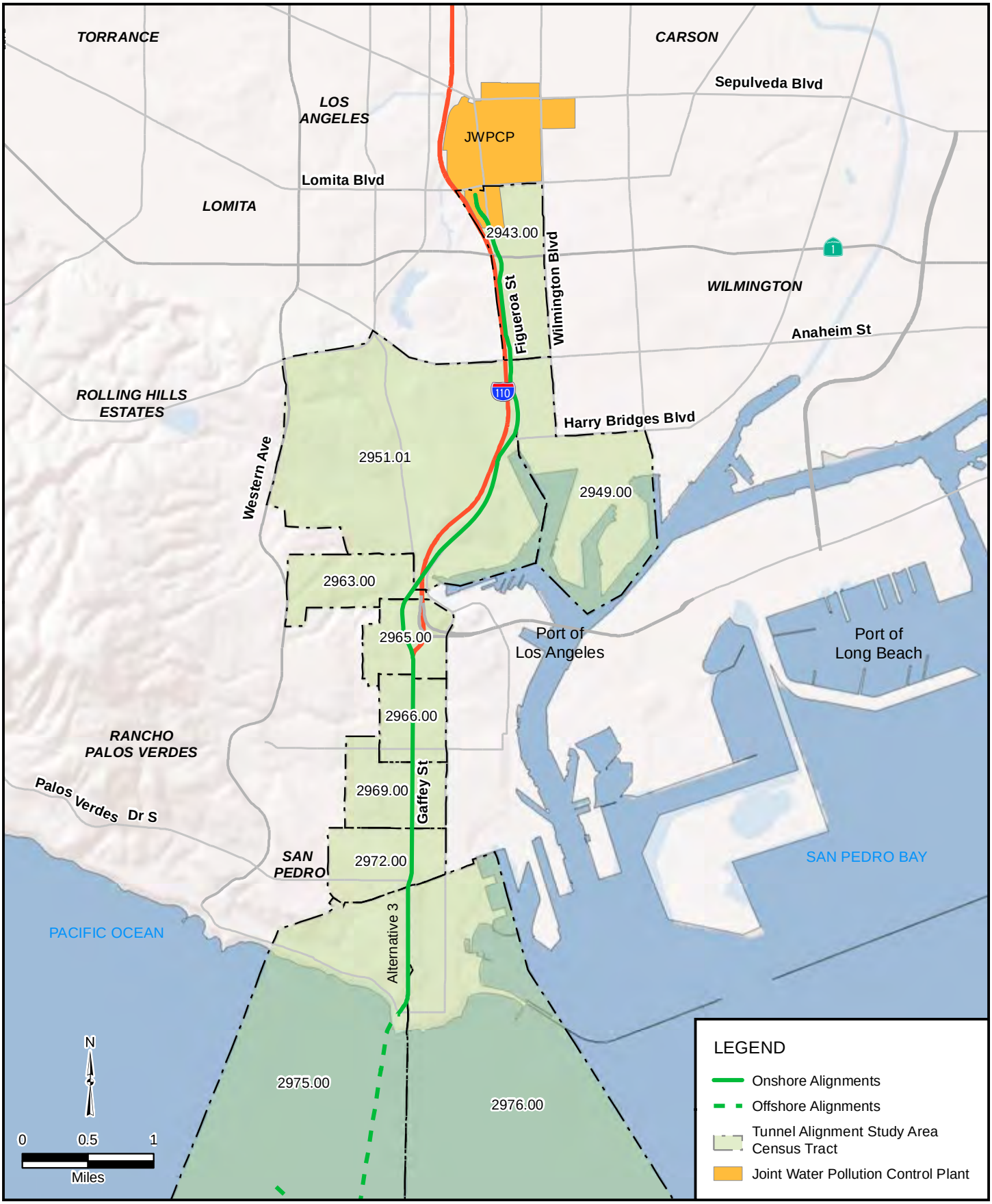


FIGURE 15-2

CLEARWATER Program

Figueroa/Gaffey to PV Shelf Tunnel Alignment Study Area

Source: Sanitation Districts of Los Angeles County 2011, US Census 2000, Thomas Bros. 2011, ESRI 2011

from 2005 projections. A majority of the employed workers in the study area are working in the service sector (40.7 percent), followed by the manufacturing (15.2 percent), utilities (11.1 percent), and retail trade (9.8 percent) sectors.

Income and Poverty Status

Per capita income for the Figueroa/Gaffey to PV Shelf tunnel alignment study area ($20,356) was slightly less than the county's per capita income ($20,683) (Table 15-6). The percentage of persons below the poverty threshold for the study area (17.5 percent) was marginally lower than that for Los Angeles County (17.9 percent) and slightly higher than that for the JOS service area (16.9 percent) (Table 15-6 and Table 15-10).

Figueroa/Western to Royal Palms Alignment

The study area for the Figueroa/Western to Royal Palms tunnel alignment consists of the U.S. Census tracts adjacent to the alignment. As shown on Figure 15-3, the adjacent census tracts are 2943.00, 2944.20, 2951.01, 2963.00, 2964.00, 2970.00, 2973.00, 2974.00, and 6707.01.

Population and Housing

As shown in Table 15-7, the total population of the Figueroa/Western to Royal Palms tunnel alignment study area, as reported in the U.S. Census 2000, was 44,919 persons. Of the total population, White persons composed the largest racial group, at 68.6 percent. Persons identified as "Some Other Race" composed the next largest group at 14.4 percent. The remaining 17.0 percent (in order of descending proportions) were Asian, Multi-racial, Black or African American, American Indian or Alaska Native, and Native Hawaiian and Other Pacific Islander. Of these racial groups, 33.7 percent identified themselves as Hispanic or Latino. For the study area, 23.7 percent of the population was under 18 years of age in 2000, while 14.7 percent was over 65 years of age. Demographic data from the SCAG 2008 RTP indicate that the study area is projected to have a population of 52,755 residents in 2035, an increase of approximately 17.4 percent from 2000. The intermediary growth trends for the county are summarized in Table 15-3.

As shown in Table 15-8, the total number of housing units within the Figueroa/Western to Royal Palms tunnel alignment study area was 7,649 of which 67.1 percent comprised single-family units, 30.0 percent comprised multi-family units, and the remaining 2.9 percent was classified as other. Of the total housing units in the study area, 97.0 percent were occupied and 3.0 percent were vacant. Of the total occupied housing units, 74.5 percent were owner-occupied and 25.5 percent were rented. The proportion for owner-occupied units in the study area is higher than that of the county (Table 15-4 and Table 15-8). The number of households in 2035 for the study area is projected to be 8,599 households, an increase of approximately 15.9 percent over 2000.

Employment

As summarized in Table 15-9, the Figueroa/Western to Royal Palms tunnel alignment study area had 20,765 jobs and an unemployment rate of 5.3 percent in 2000. According to the SCAG 2008 RTP, the employment for the study area is projected to increase to 12,331 by 2035, an increase of 11.8 percent from 2005 projections. A majority of the employed workers in the study area are working in the service sector (41.2 percent), followed by the manufacturing (14.4 percent), utilities (12.2 percent), and retail trade (9.6 percent) sectors.

Income and Poverty Status

Per capita income for the Figueroa/Western to Royal Palms tunnel alignment study area ($26,537) was substantially higher than the county's per capita income ($20,683). The percentage of persons below the poverty threshold for the Figueroa/Western to Royal Palms tunnel alignment study area (10.4 percent)

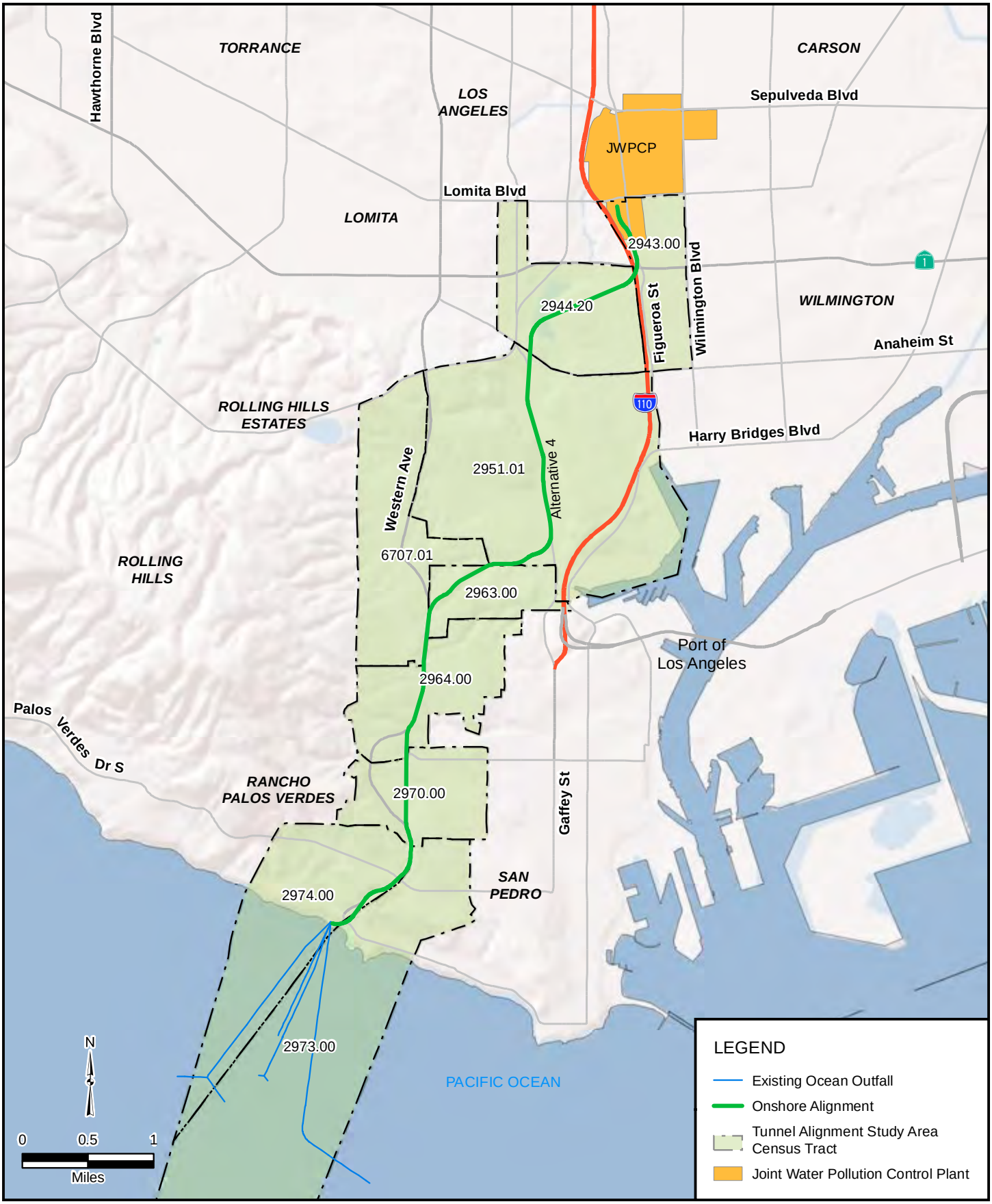


FIGURE 15-3

CLEARWATER Program

Figueroa/Western to Royal Palms Tunnel Alignment Study Area

Source: Sanitation Districts of Los Angeles County 2011, US Census 2000, Thomas Bros. 2011, ESRI 2011

was substantially lower than that for Los Angeles County (17.9 percent) or the JOS service area (16.9 percent) (Table 15-6 and Table 15-10).

15.2.3.2 Shaft Site

JWPCP East and JWPCP West

Because the census tracts surrounding the JWPCP East and the JWPCP West shaft sites are the same, the population and housing study area for the two shaft sites is the same. As shown on Figure 15-4, the study area for the JWPCP East and JWPCP West shaft sites consists of census tracts 2943.00 and 5436.04.

Population and Housing

As shown in Table 15-7, the total population of the JWPCP East and JWPCP West shaft sites study area, as reported in the U.S. Census 2000, was 5,162 persons. Of the total population, Asian persons composed the largest racial group, at 42.3 percent. Persons identified as White composed the next largest group at 27.6 percent. The remaining 30.1 percent (in order of descending proportions) were "Some Other Race," Multi-racial, Black or African American, American Indian and Alaska Native, and Native Hawaiian and Other Pacific Islander. Of these racial groups, 34.7 percent identified themselves as Hispanic or Latino. For the study area, 25.5 percent of the population was under 18 years of age in 2000, while 11.6 percent was over 65 years of age. Demographic data from the SCAG 2008 RTP indicate that the study area is projected to have a population of 6,760 residents in 2035, an increase of approximately 31.0 percent from 2000. The intermediary growth trends for the county are summarized in Table 15-3.

As shown in Table 15-8, the total number of housing units within the JWPCP East and JWPCP West shaft sites study area was 3,306 of which 76.1 percent comprised single-family units, 20.5 percent comprised multi-family units, and the remaining 3.4 percent was classified as other. Of the total housing units in the study area, 96.4 percent were occupied and 3.6 percent were vacant. Of the total occupied housing units, 67.9 percent were owner-occupied and 32.1 percent were rented. The proportion for owner-occupied units in the study area is higher than that of the county (Table 15-4 and Table 15-8). The number of households in 2035 for the study area is projected to be 3,977 households, an increase of approximately 24.8 percent over 2000.

Employment

As summarized in Table 15-9, the JWPCP East and JWPCP West shaft sites study area had 4,776 jobs and an unemployment rate of 8.0 percent in 2000. According to the SCAG 2008 RTP, the employment for the study area is projected to increase to 1,539 by 2035, an increase of 9.2 percent from 2005 projections. A majority of the employed workers in the study area are working in the service sector (36.8 percent), followed by the manufacturing (22.2 percent), retail trade (10.2 percent), and utilities (8.6 percent) sectors.

Income and Poverty Status

Per capita income for the JWPCP East and JWPCP West shaft sites study area ($15,319) was less than the county's per capita income ($20,683) (Table 15-6). The percentage of persons below the poverty threshold for the JWPCP East and JWPCP West shaft sites study area (16.0 percent) was lower than that for Los Angeles County (17.9 percent) or the JOS service area (16.9 percent) (Table 15-6 and Table 15-10).

TraPac

The study area for the Trans Pacific Container Service Corporation (TraPac) shaft site consists of census tract 2949.00 (see Figure 15-4).

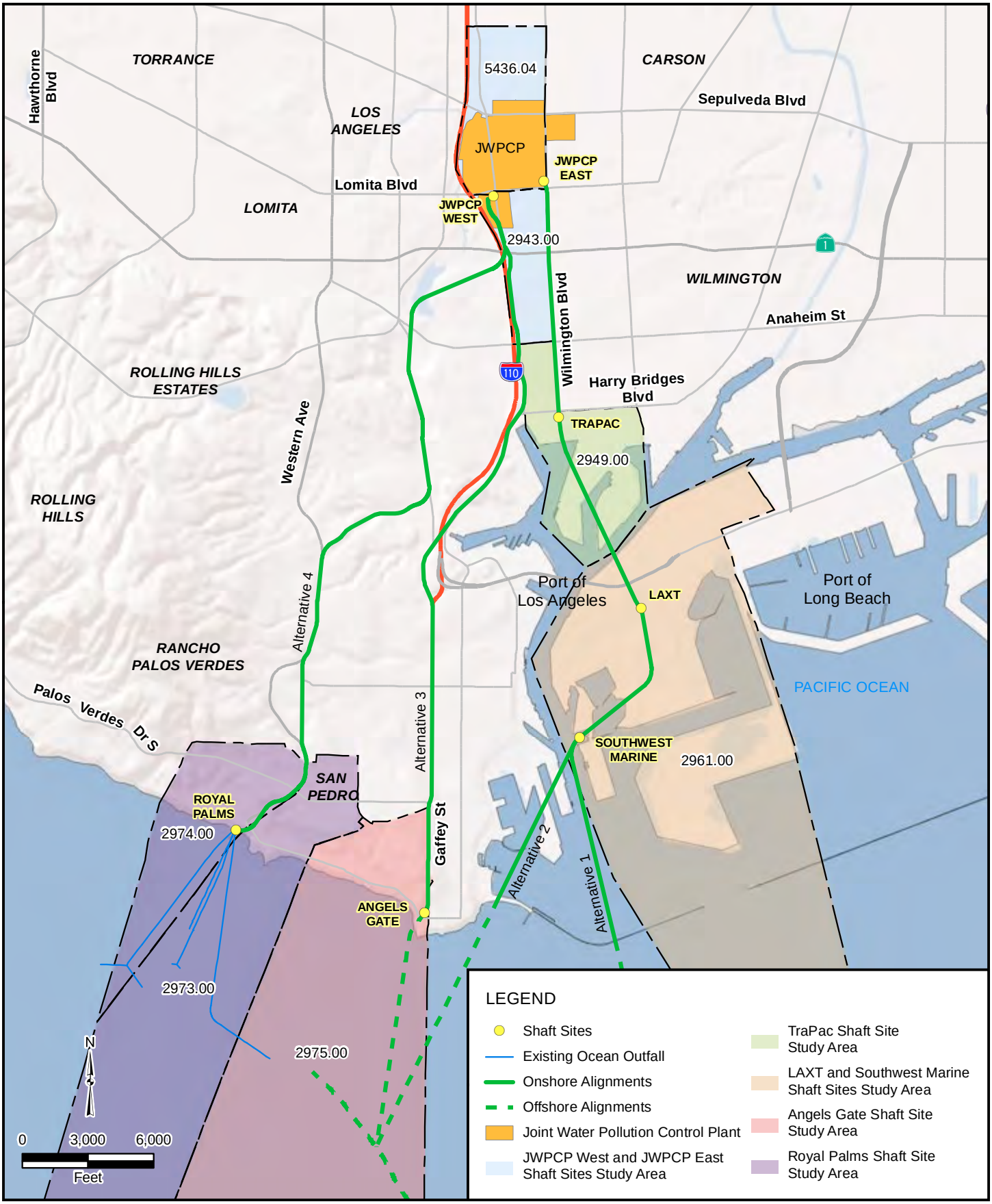


FIGURE 15-4

CLEARWATER Program

Shaft Site Study Areas

Source: Sanitation Districts of Los Angeles County 2011, US Census 2000, Thomas Bros. 2011, ESRI 2011

Population and Housing

As shown in Table 15-7, the total population of the TraPac shaft site study area, as reported in the U.S. Census 2000, was 3,262 persons. Of the total population, persons identified as "Some Other Race" composed the largest racial group, at 51.7 percent. Persons identified as White composed the next largest group at 31.9 percent. The remaining 16.4 percent (in order of descending proportions) were Black or African American, Multi-racial, Asian, American Indian and Alaska Native, and Native Hawaiian and Other Pacific Islander. Of these racial groups, 86.6 percent identified themselves as Hispanic or Latino. For the study area, 41.9 percent of the population was under 18 years of age in 2000, while 5.0 percent was over 65 years of age. Demographic data from the SCAG 2008 RTP indicate that the study area is projected to have a population of 3,907 residents in 2035, an increase of approximately 19.8 percent from 2000. The intermediary growth trends for the county are summarized in Table 15-3.

As shown in Table 15-8, the total number of housing units within the TraPac shaft site study area was 839, of which 39.1 percent comprised single-family units, and the remaining 60.9 percent comprised multi-family units. Of the total housing units in the study area, 97.1 percent were occupied and 2.9 percent were vacant. Of the total occupied housing units, 24.9 percent were owner-occupied and 75.1 percent were rented. The proportion for owner-occupied units in the study area is substantially lower than that of the county (Table 15-4 and Table 15-8). The number of households in 2035 for the study area is projected to be 1,022 households, an increase of approximately 25.3 percent over 2000.

Employment

As summarized in Table 15-9, the TraPac shaft site study area had 909 jobs and an unemployment rate of 15.5 percent in 2000. According to the SCAG 2008 RTP, the employment for the study area is projected to increase to 4,771 by 2035, an increase of 7.2 percent from 2005 projections. A majority of the employed workers in the study area are working in the service sector (40.2 percent), followed by the manufacturing (31.6 percent), retail trade (8.4 percent), and construction (9.7 percent) sectors.

Income and Poverty Status

Per capita income for the TraPac shaft site study area ($8,087) was substantially less than the county's per capita income ($20,683) (Table 15-6). The percentage of persons below the poverty threshold for the study area (41.2 percent) was substantially higher than that for Los Angeles County (17.9 percent) or the JOS service area (16.9 percent) (Table 15-6 and Table 15-10).

LAXT and Southwest Marine Shaft Sites

Because the Los Angeles Export Terminal (LAXT) shaft site and the Southwest Marine shaft site are in the same census tract, the population and housing study area for the two shaft sites is same. The study area for the LAXT and Southwest Marine shaft sites consists of census tract 2961.00 (see Figure 15-4).

Population and Housing

As shown in Table 15-7, the total population of the LAXT and Southwest Marine shaft sites study area, as reported in the U.S. Census 2000, was 1,434 persons. Of the total population, White persons composed the largest racial group, at 45.9 percent. Persons identified as Black or African American composed the next largest group at 23.9 percent. The remaining 30.2 percent (in order of descending proportions) were "Some Other Race," Multi-racial, Asian, American Indian and Alaska Native, and Native Hawaiian and Other Pacific Islander. Of these racial groups, 37.9 percent identified themselves as Hispanic or Latino. For the LAXT and Southwest Marine shaft sites study area, 5.2 percent of the population was under 18 years of age in 2000, while 4.0 percent was over 65 years of age. Demographic data from the SCAG 2008 RTP indicate that the study area is projected to have a population of 1,528 residents in 2035, an increase of approximately 6.6 percent from 2000. The intermediary growth trends for the county are summarized in Table 15-3.

As shown in Table 15-8, the total number of housing units within the LAXT and Southwest Marine shaft sites study area was 159 of which 28.3 percent comprised single-family units, 16.0 percent comprised multi-family units, and the remaining 55.7 percent was classified as other. Of the total housing units in the LAXT and Southwest Marine shaft sites study area, 62.8 percent were occupied and 37.2 percent were vacant. Of the total occupied housing units, 60.4 percent were owner-occupied and 39.6 percent were rented. The proportion for owner-occupied units in the study area is higher than that of the county (Table 15-4 and Table 15-8). The number of households in 2035 for the study area is projected to be 132 households, a decrease of approximately 20.4 percent over 2000.

Employment

As summarized in Table 15-9, the LAXT and Southwest Marine shaft sites study area had 56 jobs and an unemployment rate of 21.1 percent in 2000. According to the SCAG 2008 RTP, the employment for the study area is projected to increase to 738 by 2035, an increase of 17.0 percent from 2005 projections. A majority of the employed workers in the study area are working in the service and finance, insurance, and real estate sectors (33.9 percent respectively), followed closely by the retail trade sector (32.1 percent).

Income and Poverty Status

Per capita income for the LAXT and Southwest Marine shaft sites study area ($7,639) was substantially less than the county's per capita income ($20,683) (Table 15-6). The percentage of persons below the poverty threshold for the study area (31.0 percent) was substantially higher than that of Los Angeles County (17.9 percent) or the JOS service area (16.9 percent) (Table 15-6 and Table 15-10).

Angels Gate

The study area for the Angels Gate shaft site consists of census tract 2975.00 (see Figure 15-4).

Population and Housing

As shown in Table 15-7, the total population of the Angels Gate shaft site study area, as reported in the U.S. Census 2000, was 3,324 persons. Of the total population, White persons composed the largest racial group, at 79.8 percent. Persons identified as "Some Other Race" composed the next largest group at 5.8 percent. The remaining 14.4 percent (in order of descending proportions) were Multi-racial, Asian, American Indian and Alaska Native, and Native Hawaiian and Other Pacific Islander. Of these racial groups, 17.5 percent identified themselves as Hispanic or Latino. For the study area, 19.8 percent of the population was under 18 years of age in 2000, while 18.2 percent was over 65 years of age. Demographic data from the SCAG 2008 RTP indicate that the study area is projected to have a population of 3,948 residents in 2035, an increase of approximately 18.8 percent from 2000. The intermediary growth trends for the county are summarized in Table 15-3.

As shown in Table 15-8, the total number of housing units within the Angels Gate shaft site study area was 1,436 of which 68.2 percent comprised single-family units, and the remaining 31.8 percent comprised multi-family units. Of the total housing units in the study area, 96.2 percent were occupied and 3.8 percent were vacant. Of the total occupied housing units, 63.5 percent were owner-occupied and 36.5 percent were rented. The proportion for owner-occupied units in the Angels Gate shaft site study area is higher than that of the county (Table 15-4 and Table 15-8). The number of households in 2035 for the study area is projected to be 1,682 households, an increase of approximately 21.7 percent over 2000.

Employment

As summarized in Table 15-9, the Angels Gate shaft site study area had 1,715 jobs and an unemployment rate of 5.3 percent in 2000. According to the SCAG 2008 RTP, the employment for the study area is projected to increase to 933 by 2035, an increase of 9.1 percent from 2005 projections. A majority of the

employed workers in the study area are working in the service sector (46.2 percent), followed by the utilities (12.7 percent), manufacturing (8.4 percent), and retail trade (8.0 percent) sectors.

Income and Poverty Status

Per capita income for the Angels Gate shaft site study area ($32,307) was substantially higher than the county's per capita income ($20,683) (Table 15-6). The percentage of persons below the poverty threshold for the study area (7.1 percent) was substantially lower than that for Los Angeles County (17.9 percent) or the JOS service area (16.9 percent) (Table 15-6 and Table 15-10).

Royal Palms

The study area for the Royal Palms shaft site consists of census tracts 2973.00 and 2974.00 (see Figure 15-4).

Population and Housing

As shown in Table 15-7, the total population of the Royal Palms shaft site study area, as reported in the U.S. Census 2000, was 6,501 persons. Of the total population, White persons composed the largest racial group, at 85.1 percent. Persons identified as Asian composed the next largest group at 4.1 percent. The remaining 10.8 percent (in order of descending proportions) were Multi-racial, "Some Other Race," Black or African American, American Indian and Alaska Native, and Native Hawaiian and Other Pacific Islander. Of these racial groups, 12.5 percent identified themselves as Hispanic or Latino. For the study area, 19.9 percent of the population was under 18 years of age in 2000, while 22.7 percent was over 65 years of age. Demographic data from the SCAG 2008 RTP indicate that the study area is projected to have a population of 7,869 residents in 2035, an increase of approximately 21.0 percent from 2000. The intermediary growth trends for the county are summarized in Table 15-3.

As shown in Table 15-8, the total number of housing units within the Royal Palms shaft site study area was 2,737 of which 77.0 percent comprised single-family units, 14.4 percent comprised multi-family units, and the remaining 8.6 percent was classified as other. Of the total housing units in the study area, 96.7 percent were occupied and 3.3 percent were vacant. Of the total occupied housing units, 78.0 percent were owner-occupied and 22.0 percent were rented. The proportion for owner-occupied units in the study area is higher than that of the county (Table 15-4 and Table 15-8). The number of households in 2035 for the study area is projected to be 3,264 households, an increase of approximately 23.3 percent over 2000.

Employment

As summarized in Table 15-9, the Royal Palms shaft site study area had 3,189 jobs and an unemployment rate of 3.0 percent in 2000. According to the SCAG 2008 RTP, the employment for the study area is projected to increase to 974 by 2035, an increase of 33.6 percent from 2005 projections. A majority of the employed workers in the study area are working in the service sector (42.9 percent), followed by the utilities (14.3 percent), manufacturing (8.1 percent), and retail trade (8.0 percent) sectors.

Income and Poverty Status

Per capita income for the Royal Palms shaft site study area ($35,058) was substantially higher than the county's per capita income ($20,683) (Table 15-6). The proportion of persons below the poverty threshold for the study area (4.0 percent) was substantially lower than that for Los Angeles County (17.9 percent) or the JOS service area (16.9 percent) (Table 15-6 and Table 15-10).

15.2.3.3 Riser/Diffuser Area

The study area for the riser/diffuser areas would correspond to the study areas for the Royal Palms and Angels Gate shaft sites (see Figure 15-4) during construction because construction activities would be visible from these study areas. During the operation phase, no existing population or housing would be affected by the riser and diffuser or the existing ocean outfalls, because the riser/diffuser areas would be located on the seafloor.

15.3 Regulatory Setting

15.3.1 Federal

15.3.1.1 Executive Order 12898

In 1994, in response to growing concern that minority and/or low-income populations bear a disproportionate amount of adverse health and environmental effects, President Clinton issued Executive Order 12898 on Environmental Justice, formally focusing federal agency attention on these issues. The Executive Order contains a general directive that states that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

The order authorized the creation of an Interagency Working Group (IWG) on Environmental Justice, overseen by the U.S. Environmental Protection Agency (EPA), to implement the Executive Order's requirements. The IWG includes representatives of a number of executive agencies and offices and has developed guidance for terms contained in the Executive Order. The EPA provides the following definitions:

> **Environmental Justice.** The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. (EPA 2004:Section 2.2.)
>
> **Fair Treatment.** No group of people, including a racial, ethnic, or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. (EPA 2004:Section 2.2.)
>
> **Meaningful Involvement.**
>
> 1. Potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health.
> 2. The public's contribution can influence the regulatory agency's decision.
> 3. The concerns of all participants involved will be considered in the decision making process.
> 4. The decision makers seek out and facilitate the involvement of those potentially affected. (EPA 2004:Section 2.2.)
>
> **Disproportionately High and Adverse Effect.** An adverse effect or impact that: (1) is predominately borne by any segment of the population, including, for example, a minority

population and/or a low-income population; or (2) will be suffered by a minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect or impact that will be suffered by a non-minority population and/or non-low-income population. (EPA 2004:Section 3.1.)

15.3.1.2 Council on Environmental Quality: Environmental Justice—Guidance under the National Environmental Policy Act

While the EPA has lead responsibility for implementation of Executive Order 12898 as chair of the IWG on environmental justice, the Council on Environmental Quality (CEQ) has oversight of the federal government's compliance with this Executive Order and NEPA. The CEQ, in consultation with the EPA and other agencies, has prepared guidance to assist federal agencies in NEPA compliance in its Environmental Justice: Guidance under the National Environmental Policy Act (CEQ Guidance) (CEQ 1997). The CEQ Guidance provides an overview of Executive Order 12898; summarizes its relationship to NEPA; recommends methods for the integration of environmental justice analysis into NEPA documents; and incorporates as an appendix the IWG's definitions of key terms and concepts contained in the executive order.

- Agencies are permitted to supplement the CEQ Guidance with their own, more specific guidance tailored to their programs or activities or departments, insofar as is permitted by law.
- Neither the executive order nor the CEQ Guidance proscribes to a specific format for environmental justice assessments in the context of NEPA documents. However, the CEQ Guidance identifies the following six general principles intended to guide the integration of environmental justice assessment into NEPA compliance, and which are applicable to the Clearwater Program:
  - Agencies should consider the composition of the affected area to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by the proposed action and, if so, whether there may be disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, or Indian tribes.
  - Agencies should consider relevant public health data and industry data concerning the potential for multiple or cumulative exposure to human health or environmental hazards in the affected population and historical patterns of exposure to environmental hazards, to the extent such information is reasonably available. For example, data may suggest there are disproportionately high and adverse human health or environmental effects on a minority population, low-income population, or Indian tribe from the agency action. Agencies should consider these multiple, or cumulative effects, even if certain effects are not within the control or subject to the discretion of the agency proposing the action.
  - Agencies should recognize the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the agency's proposed action. These factors should include the physical sensitivity of the community or population to particular impacts; the effect of any disruption on the community structure associated with the proposed action; and the nature and degree of impact on the physical and social structure of the community.
  - Agencies should develop effective public participation strategies. Agencies should, as appropriate, acknowledge and seek to overcome linguistic, cultural, institutional, geographic,

and other barriers to meaningful participation, and should incorporate active outreach to affected groups.

- Agencies should assure meaningful community representation in the process. Agencies should be aware of the diverse constituencies within any particular community when they seek community representation and should endeavor to have complete representation of the community as a whole. Agencies also should be aware that community participation must occur as early as possible if it is to be meaningful.
- Agencies should seek tribal representation in the process in a manner that is consistent with the government-to-government relationship between the United States and tribal governments, the federal government's trust responsibility to federally-recognized tribes, and any treaty rights.

The CEQ Guidance states that the identification of a disproportionately high and adverse human health or environmental effect on a low-income or minority population does not preclude a proposed agency action from going forward or compel a finding that a proposed project is environmentally unacceptable. Instead, the identification of such effects is expected to encourage agency consideration of alternatives, mitigation measures, and preferences expressed by the affected community or population.

15.3.2 State

15.3.2.1 Public Resource Codes Sections 71110–71116

Environmental justice is defined by California state law as "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies."

Public Resource Code (PRC) Section 71113 states that the mission of California Environmental Protection Agency (CalEPA) includes ensuring that it conducts any activities that substantially affect human health or the environment in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority and low-income populations of the state.

As part of its mission, CalEPA was required to develop a model environmental justice mission statement for its boards, departments, and offices. CalEPA was tasked to develop a Working Group on Environmental Justice to assist it in identifying any policy gaps or obstacles impeding the achievement of environmental justice. An advisory committee including representatives of numerous state agencies was established to assist the Working Group pursuant to the development of a CalEPA intra-agency strategy for addressing environmental justice. PRC Sections 71110–71116 charge the CalEPA with the following responsibilities:

- Conduct programs, policies, and activities that substantially affect human health or the environment in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income populations of the state.
- Promote enforcement of all health and environmental statutes within CalEPA's jurisdiction in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income populations of the state.
- Ensure greater public participation in the agency's development, adoption, and implementation of environmental regulations and policies.

- Improve research and data collection for programs within the agency relating to the health and environment of minority populations and low-income populations of the state.
- Coordinate efforts and share information with the EPA.
- Identify differential patterns of consumption of natural resources among people of different socio-economic classifications for programs within the agency.
- Consult with and review any information received from the Working Group on Environmental Justice pursuant to developing an agency-wide strategy for CalEPA.
- Develop a model environmental justice mission statement for CalEPA's boards, departments, and offices.
- Consult with, review, and evaluate any information received from the Working Group on Environmental Justice pursuant to the development of its model environmental justice mission statement.
- Develop an agency-wide strategy to identify and address any gaps in existing programs, policies, or activities that may impede the achievement of environmental justice.
- Make recommendations on other matters needed to assist the agency in developing an intra-agency environmental justice strategy.

15.3.2.2 California Government Code Sections 65040–65040.12

California Government Code Sections 65040–65040.12 identify the Governor's Office of Planning and Research (OPR) as the comprehensive state agency responsible for long-range planning and development. Among its responsibilities, OPR is tasked with serving as the coordinating agency in state government for environmental justice issues. Specifically, OPR is required to consult with CalEPA, the state Resources Agency, the Working Group on Environmental Justice, and other state agencies as appropriate, and share information with the CEQ, EPA, and other federal agencies as appropriate to ensure consistency.

CalEPA released its final Intra-Agency Environmental Justice Strategy in August 2004. The document sets forth the agency's broad vision for integrating environmental justice into the programs, policies, and activities of its departments. It contains a series of goals, including the integration of environmental justice into the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.

15.3.2.3 California State Lands Commission Environmental Justice Policy

The California State Lands Commission (CSLC) adopted an Environmental Justice Policy on October 1, 2002 (CSLC 2002), wherein the CSLC pledges to continue and enhance its processes, decisions, and programs with environmental justice as an essential consideration by, among other actions, "identifying relevant populations that might be adversely affected by commission programs or by projects submitted by outside parties for its consideration." The policy also cites the definition of environmental justice in state law and points out that this definition is consistent with the Public Trust Doctrine principle that the management of trust lands is for the benefit of all of the people. To date, the CSLC has not issued any guidance to implement the policy, although environmental justice is addressed in CSLC environmental documents.

15.3.2.4 California Planning and Zoning Law

California Planning and Zoning Law (Government Code Section 65000 et seq.) requires each city and county to adopt a general plan for the physical development of the land housing stock within its planning

area. The general plan must contain land use, housing, circulation, open space, conservation, noise, and safety elements, as well as any other elements that the city or county may wish to adopt.

15.3.3 Regional

15.3.3.1 Southern California Association of Governments

SCAG's Regional Comprehensive Plan and Guide and Regional Housing Needs Assessment (RHNA) are tools for coordinating regional planning and housing development strategies in Southern California. State housing law mandates that local governments, through councils of governments, identify existing and future housing needs in a RHNA. The RHNA provides recommendations and guidelines to identify housing needs within cities. It does not impose requirements as to housing development in cities.

15.3.3.2 South Coast Air Quality Management District

In 1997, the South Coast Air Quality Management District (SCAQMD) adopted a set of guiding principles on environmental justice, addressing the rights of area citizens to clean air, the expectation of government safeguards for public health, and access to scientific findings concerning public health. Subsequent follow-up plans and initiatives led to the SCAQMD Board's approval of the 2003–2004 Environmental Justice Workplan. SCAQMD intends to update this as needed to reflect ongoing and new initiatives.

SCAQMD's environmental justice program is intended to "ensure that everyone has the right to equal protection from air pollution and fair access to the decision making process that works to improve the quality of air within their communities." Environmental justice is defined by SCAQMD as "...equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution."

15.3.4 Local

15.3.4.1 General Plan of the City of Los Angeles

Housing Element

A housing element sets forth a city's 5-year strategy to preserve and enhance the community's character and expand housing opportunities for all economic segments; it also provides guidance for local government decision-making in all matters related to housing.

The city is required by state housing law to provide a detailed program to address the housing needs of its current and future residents. Specifically, the law requires the following:

- The housing element shall consist of an identification and analysis of existing and projected housing needs and a statement of goals, policies, and quantified objectives and scheduled programs for the preservation, improvement, and development of housing. The housing element shall identify adequate sites for housing, including rental housing, factory-built housing, and mobile homes, and shall make adequate provision for the existing and projected needs of all economic segments of the community.

The City of Los Angeles General Plan Housing Element consists of the following major components:

- Needs Assessment—an analysis of the demographic, household, and housing characteristics and trends.
- Constraints to Residential Development—a review of potential and actual market, governmental, environmental, and other constraints to meeting the identified housing needs.
- Issues, Goals, Objectives and Policies—a set of objectives and policies to address the housing needs of the city.
- Implementation Programs—a review of the strategies contained within the housing element that will assist the city in meeting the housing needs and goals.

Environmental Justice

The City of Los Angeles General Plan has adopted environmental justice policies as outlined in its framework and transportation elements; these policies are summarized in this section. The framework element is a "strategy for long-term growth which sets a citywide context to guide the update of the community plan and citywide elements."

The framework element includes a policy to "assure the fair treatment of people of all races, cultures, incomes and education levels with respect to the development, implementation and enforcement of environmental laws, regulations and policies, including affirmative efforts to inform and involve environmental groups, especially environmental justice groups, in early planning stages through notification and two-way communication."

The transportation element includes a policy to "assure the fair and equitable treatment of people of all races, cultures, incomes and education levels with respect to the development and implementation of citywide transportation policies and programs, including affirmative efforts to inform and involve environmental groups, especially environmental justice groups, in the planning and monitoring process through notification and two-way communication."

The city of Los Angeles also has committed to a Compact for Environmental Justice, which was adopted by the City's Environmental Affairs Department as the City's foundation for a sustainable urban environment. Statements relevant to the proposed project include the following:

- All people in Los Angeles are entitled to equal access to public open space and recreation, clean water, and uncontaminated neighborhoods.
- All planning and regulatory processes must involve residents and community representatives in decision making from start to finish.

15.4 Environmental Impacts and Mitigation Measures

15.4.1 Methodology and Assumptions

15.4.1.1 Environmental Justice

The following methodology and assessment addresses the potential for the project to cause disproportionately high and adverse human health and environmental effects on minority and/or low-income populations. It is provided in compliance with federal Executive Order 12898, Federal

Actions to Address Environmental Justice in Minority and Low-Income Populations, and in accordance with the CEQ Guidance (CEQ 1997), which are both described in Section 15.3.1.

The CEQ Guidance defines minority persons as "individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black (not of Hispanic origin); or Hispanic" (CEQ 1997:25). Hispanic or Latino refers to an ethnicity whereas American Indian, Alaskan Native, Asian, Pacific Islander, and Black or African-American (as well as White or European-American) refer to racial categories; thus, for census purposes, individuals classify themselves into racial categories as well as ethnic categories, where ethnic categories include Hispanic or Latino and non-Hispanic or Latino. The U.S. Census 2000 allowed individuals to choose more than one race. For this analysis, consistent with guidance from CEQ (1997) as well as the EPA (1998, 1999), minority refers to people who are Hispanic or Latino of any race, as well as those who are non-Hispanic or Latino of a race other than White or European-American.

The same CEQ Guidance suggests low-income populations be identified using the national poverty thresholds from the U.S. Census Bureau; guidance from the EPA (1998, 1999) also suggests using other regional low-income definitions as appropriate. To establish context for this environmental justice analysis, race and ethnicity (i.e., minority) and income characteristics of the population residing in the vicinity of the project were reviewed. The review concluded that there is presence of minority or low-income populations in project vicinity. If the percentage of population below the poverty line in the study area is more than the county's percentage, the population was considered low income.

For this assessment, the area of potential effect was determined in accordance the CEQ Guidance for identifying the affected community, which requires consideration of the nature of likely project impacts and identification of a corresponding unit of geographic analysis. The area of potential project effect for purposes of environmental justice corresponds to the areas of effect associated with the specific environmental issues analyzed in this EIR/EIS. Areas of potential effect differ somewhat for each environmental issue. The affected community corresponds with the study area for each alignment and shaft site. The county of Los Angeles forms part of the reference community. The reference community is used to determine whether a disproportionately high and adverse human health or environmental impact would be borne by minority and/or low-income populations in the affected community when compared to the general population in and around the project.

The methodology for conducting the impact analysis for environmental justice included reviewing impact conclusions for each of the resources in Chapters 4 through 20. If the EIR/EIS identified impacts considered significant and adverse, an evaluation was conducted to determine if these impacts would result in disproportionately high and adverse effects on minority populations or low-income populations for the affected community.

The L.A. CEQA Thresholds (City of Los Angeles 2006) does not identify significance thresholds for environmental justice or for disproportionately high and adverse effects on minority and low-income populations. In the absence of local thresholds for the project, federal guidance provided by CEQ has been utilized as the basis for determining whether the project would result in environmental justice effects. CEQ has oversight of the federal government's compliance with Executive Order 12898 and NEPA and has published the CEQ Guidance (CEQ 1997) as described in Section 15.3.1.2. The CEQ Guidance identifies three factors to be considered to the extent practicable when determining whether environmental effects are disproportionately high and adverse (CEQ 1997: 26–27):

- Whether there is or would be an impact on the natural or physical environment that significantly and adversely affects a minority population, or low-income population. Such effects may include

ecological, cultural, human health, economic, or social impacts on minority communities, low-income communities, or Indian tribes when those impacts are interrelated to impacts on the natural or physical environment.

- Whether the environmental effects are significant and are or may be having an adverse impact on minority populations, or low-income populations, that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group.
- Whether the environmental effects occur or would occur in a minority population or low-income population affected by cumulative or multiple adverse exposures from environmental hazards.

Findings for project-level impacts were reviewed to determine which impacts would be significant and would, therefore, require environmental justice analysis.

- For impacts that were classified as less than significant or as no impact, no additional evaluation was needed because those impacts would not result in disproportionate effects on minority and low income populations.
- Findings of significant impacts were reviewed to determine whether those impacts could cause substantial effects on human populations (i.e., the public), as opposed to primarily affecting the natural or physical environment and/or resulting in limited public exposure. Significant impacts that would not be associated with substantial effects on human populations would not result in disproportionately high and adverse effects on minority and low-income populations
- For findings of significant impacts that would affect the public, mitigation measures were considered to determine whether adverse effects would still be significant (as defined by CEQA) after mitigation measures are implemented. If the mitigated impact would have a less than significant impact on minority and/or low-income populations, a detailed analysis was not conducted.
- If the impact would be significant and unavoidable, the impact was further evaluated to determine whether it would result in disproportionately high and adverse human health or environmental effects on minority and low-income populations. If the specific location of the impact was identified, the population demographics of the affected area were estimated using data from the U.S. Census 2000. In cases where the boundaries of the impacted area were not known, conclusions were drawn based on available information. In cases where data limitations did not allow a full evaluation, this fact was identified.
- In cases where the minority and low-income characteristics of populations in the impacted area could be estimated, the impact area characteristics were compared to data for the general population (i.e., Los Angeles County). If the minority population in the adversely affected area is greater than 50 percent or if either the minority percentage or the low-income percentage of the population in the adversely affected area is meaningfully greater than that of the general population, disproportionate effects on minority or low-income populations could occur. (Meaningfully greater is not defined in CEQ or EPA guidance; for this analysis, meaningfully greater is interpreted to mean simply greater, which provides for a conservative analysis.) In addition, disproportionate effects could also occur in cases where impacts are predominantly borne by minority or low-income populations.
- Proposed project benefits were also considered to determine whether adverse effects would still be appreciably more severe or of greater magnitude after these other elements are considered. In addition, if significant unavoidable impacts were determined to be disproportionate, the identified mitigation measures were reviewed to determine whether they would be effective in avoiding or

reducing the impacts on minority and low-income populations. If necessary, additional mitigation measures were considered.

15.4.1.2 Population, Housing, and Employment

Impacts on population, housing, and employment are evaluated by determining if a substantial change in local employment or the labor force, or a substantial increase in housing, would occur in the project areas. The analysis is based on future employment (construction and operations) generated from implementation of the project relative to census tract level employment forecasts developed by SCAG under the RTP (SCAG 2008). As a regional planning agency, SCAG is responsible for developing the forecasts, programs, measures, and strategies portions of the South Coast Air Quality Management Plan.

15.4.1.3 Baseline

CEQA Baseline

The CEQA baseline includes the population, housing, and employment information for U.S. Census 2000 provided at the locations where project elements would be constructed and operated.

NEPA No-Federal-Action Baseline

The NEPA no-federal-action baseline is the same as the CEQA baseline for the project elements for population, housing, and employment.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the U.S. Army Corps of Engineers' (Corps') geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

15.4.2 Thresholds of Significance

The project would pose a significant impact if it exceeds any of the following thresholds for employment, housing, socioeconomics, or environmental justice (SOC):

SOC-1. Results in displacement of a large number of people necessitating the construction of replacement housing elsewhere.

SOC-2. Results in displacement of substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

SOC-3. Results in environmental impacts that are disproportionately high and adverse on minority and low-income populations.

SOC-4. Causes a substantial change in local employment or the labor force.

SOC-5. Causes a substantial decrease in property values in the project area.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on employment, housing, socioeconomics, and environmental justice before mitigation. Table 15-11 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 15-11 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 15-11. Thresholds Evaluated

		Threshold				
	Alt.	**SOC-1**	**SOC-2**	**SOC-3[b]**	**SOC-4**	**SOC-5**
Project Element						
Wilmington to SP Shelf (onshore tunnel) [a]	1,2			X	X	
Wilmington to SP Shelf (offshore tunnel)	1				X	
Wilmington to PV Shelf (onshore tunnel)[a]	1,2			X	X	
Wilmington to PV Shelf (offshore tunnel)	2				X	
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3			X	X	
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3				X	
Figueroa/Western to Royal Palms (onshore tunnel)	4			X	X	
JWPCP East Shaft Site	1,2			X	X	
TraPac Shaft Site	1,2			X	X	
LAXT Shaft Site	1,2			X	X	
Southwest Marine Shaft Site	1,2			X	X	
JWPCP West Shaft Site	3,4			X	X	
Angels Gate Shaft Site	3			X	X	
Royal Palms Shaft Site	4			X	X	
SP Shelf Riser/Diffuser Area	1				X	
PV Shelf Riser/Diffuser Area	2,3				X	
Existing Ocean Outfalls Riser/Diffuser Area	1–4			X	X	
Emergency Discharge	6			X		

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
[b] Only project elements with an impact determination of significant and unavoidable were brought forward for analysis under SOC-3 (i.e., environmental justice) (see Table 15-12).
Alt. = alternative

Less than significant impacts would have no potential to have a disproportionately high and adverse effect on minority and low-income populations; therefore, only impacts that were determined to be significant and unavoidable in the EIR/EIS are analyzed under Impact SOC-3 and summarized in Table 15-12. It should be noted that Impact SOC-3 analyzes disproportionately high and adverse impacts on minority and low-income populations as required under NEPA; therefore, there is no CEQA analysis provided under Impact SOC-3.

Table 15-12. Significant and Unavoidable Impacts Analyzed for Impact SOC-3

		Threshold											
Project Element	**Alt.**	**AES-1**	**AES-3**	**AQ-4**	**CUL-3**	**GEO-5**	**HYD-1**	**HYD-5**	**HYD-7**	**MAR-6**	**MAR-7**	**REC-1**	**UTL-1**
Wilmington to SP Shelf (onshore tunnel) [a]	1,2				X (C)								
Wilmington to PV Shelf (onshore tunnel)[a]	1,2				X (C)								
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3				X (C)								
Figueroa/Western to Royal Palms (onshore tunnel)	4				X (C)								
JWPCP East Shaft Site	1,2		X (C)		X (C)								
TraPac Shaft Site	1,2				X (C)								
LAXT Shaft Site	1,2				X (C)								
Southwest Marine Shaft Site	1,2				X (C)								
JWPCP West Shaft Site	3,4				X (C)								
Angels Gate Shaft Site	3	X (C)	X (C)		X (C)								
Royal Palms Shaft Site	4	X (C)	X (C)		X (C)								
Existing Ocean Outfalls Riser/Diffuser Area	1–4	X (C)	X (C)										
Emergency Discharge	6					X (O)	X (O)	X (O)	X (O)	X (O)	X (O)	X (O)	X (O)

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.

Alt. = alternative

C = construction

O = operation

AES-1 = Would the project conflict with adopted goals or policies that protect visual quality of a designated scenic vista or scenic resource, resulting in an adverse aesthetic impact such as obstruction of view or degradation of visual character?

AES-3 = Would the project substantially degrade the existing visual character or quality of the site or its surroundings?

CUL-3 = Would the project result in disturbance or destruction of a unique paleontological resource or site or unique geologic feature?

GEO-5 = Would the project substantially accelerate natural processes of wind and water erosion and sedimentation, resulting in sediment runoff or deposition, which would not be contained or controlled on site?

HYD-1 = Would the project create pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code or cause regulatory standards to be violated, as defined in the applicable NPDES stormwater permit or water quality control plan for the receiving waterbody?

HYD-5 = Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on site or off site?

HYD-7 = Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

MAR-6 = Would the project result in a public health hazard due to the release of treated effluent?

MAR-7 = Would the project impair beneficial uses designated in the California Ocean Plan?

REC-1 = Would the project result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?

UTL-1 = Would the project exceed wastewater treatment requirements of the applicable regional water quality control board?

Note that significant and unavoidable air quality impacts would occur as a result of NO_X emissions during construction of the Clearwater Program. Because emissions are analyzed on a regional level and would occur throughout the study area, the impacts on the reference community (Los Angeles County) and affected community would be same. Air quality impacts would not result in disproportionately high and adverse effects on minority and low-income populations, and are not discussed under Impact SOC-3. Additionally, in accordance with the CEQ Guidance, a NEPA impact determination is not required for

greenhouse gas (GHG) emissions. Therefore, GHG emissions also are not discussed under Impact SOC-3.

In the alternatives analysis that follows, if a project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears. Additionally, in subsequent alternatives where no new elements are introduced under a specific threshold, that threshold is not repeated.

15.4.3 Alternative 1

15.4.3.1 Program

Alternative 1 (Program) would result in no impacts or less than significant impacts on employment and housing. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A). Additionally, an evaluation of socioeconomics and environmental justice is not required for the program, which is outside the NEPA scope of analysis.

15.4.3.2 Project

Impact SOC-3 analyzes disproportionately high and adverse impacts on minority and low-income populations as required under NEPA; therefore, there is no CEQA analysis provided under Impact SOC-3.

Impact SOC-3. Would Alternative 1 (Project) result in environmental impacts that are disproportionately high and adverse on minority and low-income populations?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

The affected community for the Wilmington to SP Shelf onshore tunnel alignment is considered to be the population residing within the Wilmington tunnel alignment study area, which extends from the JWPCP East shaft site to the Southwest Marine shaft site. Note that impacts on environmental justice would not occur from activities on the segment of the tunnel alignment that extends into the ocean because populations do not live in the ocean. However, the offshore tunnel alignment between the TraPac and Southwest Marine shaft sites occurs on land and may affect the public. Therefore, for purposes of environmental justice, the Wilmington to SP Shelf onshore tunnel alignment extends to the Southwest Marine shaft site (see Figure 15-1).

Based on a review of the population and income characteristics of the Wilmington tunnel alignment study area, there is a presence of minority populations (see Table 15-7) with 65.1 percent of the population identifying their ethnicity as Hispanic or Latino and 57.8 percent of the population identifying themselves as belonging to a race other than White or European-American. In terms of low-income population, the per capita income of the study area ($12,731) is much less than that of the county, and the proportion of population below poverty thresholds (21.5 percent) is much higher in the study area when compared to the county (see Table 15-6 and Table 15-10). Thus, the study area has a greater presence of minority and low-income populations in comparison to the reference community.

Construction

NEPA Analysis

The EIR/EIS determined that most of the construction impacts for the Wilmington to SP Shelf onshore tunnel would be mitigated; however, construction would result in significant and unavoidable impacts on cultural resources. These impacts are further evaluated to determine if they would be disproportionately borne by low-income and minority populations.

Cultural Resources. The geologic formations for the Wilmington to SP Shelf onshore tunnel are Lakewood Formation, San Pedro Sand, and Timms Point Silt. The construction of the Wilmington to SP Shelf onshore tunnel may result in impacts associated with unknown buried paleontological resources that would be significant and could not be mitigated. However, these impacts would occur subsurface on paleontological resources. Because the impacts on paleontological resources would not affect human populations, this would not constitute a disproportionately high and adverse effect on minority or low-income populations. Environmental justice impacts would be less than significant.

Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Site – JWPCP East

The affected community for the JWPCP East shaft site is considered to be the population residing within the JWPCP East and JWPCP West shaft sites study area. Based on a review of the population and income characteristics of the study area, there is a presence of minority populations (see Table 15-7) with 34.7 percent of the population identifying their ethnicity as Hispanic or Latino and 72.7 percent of the population identifying themselves as belonging to a race other than White or European-American. In terms of low-income population, the per capita income of the study area ($15,319) is lower than that of the county, and the proportion of population below poverty thresholds (16.0 percent) in the study area is similar to the county (see Table 15-6 and Table 15-10). Thus, the study area has a greater presence of minority and low-income populations in comparison to the reference community.

Construction

NEPA Analysis

The EIR/EIS determined that most of the construction impacts at the JWPCP East shaft site would be mitigated; however, construction would result in significant and unavoidable impacts on aesthetic and cultural resources. These impacts are further evaluated to determine if they would be disproportionately borne by low-income and minority populations.

Aesthetic Resources. Residents located immediately across Lomita Boulevard from the site would be the most directly affected by a change in their views from an approximately 12-foot-tall block wall to an approximately 20-foot-tall noise barrier behind the existing wall, within the bounds of the shaft site. The sensitivity of these residents to such impacts would be high, and they are likely to regard the construction of the noise barrier as a negative visual intrusion. Although the 12-foot-tall wall would limit background views, the noise barrier would block large portions of the sky and be perceived as an imposing vertical structure. Such a feature would detract from the existing visual character of the site and its surroundings, until operations ceased and the noise barrier were removed. Impacts on these residents are considered adverse because residents would experience a notable change in the visual character of available views during construction of the project. Mitigation Measure (MM) AES-3a would reduce these impacts but not to a less than significant level. The significant and unavoidable aesthetic impacts would be

disproportionately high and adverse on minority and low-income populations living in the JWPCP East shaft site study area.

Cultural Resources. Excavation at the JWPCP East shaft site has the potential to encounter significant buried paleontological resources within the Lakewood Formation. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant. However, these impacts would occur subsurface on paleontological resources. Because the impacts on paleontological resources would not affect human populations, this would not constitute a disproportionately high and adverse effect on minority or low-income populations. Environmental justice impacts would be less than significant.

Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Site – TraPac

The affected community for the TraPac shaft site is considered to be the population residing within the TraPac shaft site study area. Based on a review of the population and income characteristics of the study area, there is a presence of minority populations (see Table 15-7) with 86.6 percent of the population identifying their ethnicity as Hispanic or Latino and 68.1 percent of the population identifying themselves as belonging to a race other than White or European-American. In terms of low-income population, the per capita income of the study area ($8,087) is lower than that of the county, and the proportion of population below poverty thresholds (41.2 percent) in the study area is much higher in comparison to the county (see Table 15-6 and Table 15-10). Thus, the study area has a greater presence of minority and low-income populations in comparison to the reference community.

Construction

NEPA Analysis

The EIR/EIS determined that most of the construction impacts at the TraPac shaft site would be mitigated; however, construction would result in significant and unavoidable impacts on cultural resources. These impacts are further evaluated to determine if they would be disproportionately borne by low-income and minority populations.

Cultural Resources. Excavation at the TraPac shaft site has the potential to encounter significant buried paleontological resources within the Lakewood Formation. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant. However, these impacts would occur subsurface on paleontological resources. Because the impacts on paleontological resources would not affect human populations, this would not constitute a disproportionately high and adverse effect on minority or low-income populations. Environmental justice impacts would be less than significant.

Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Sites – LAXT and Southwest Marine

The affected community for the LAXT and Southwest Marine shaft sites is considered to be the population residing within the LAXT and Southwest Marine shaft sites study area. Based on a review of the population and income characteristics of the study area, there is a presence of minority populations (see Table 15-7) with 37.9 percent of the population identifying their ethnicity as Hispanic or Latino and 54.1 percent of the population identifying themselves as belonging to a race other than White or

European-American. In terms of low-income population, the per capita income of the study area ($7,639) is lower than that of the county, and the proportion of population below poverty thresholds (31.0 percent) in the study area is much higher in comparison to the county (see Table 15-6 and Table 15-10). Thus, the study area has a greater presence of minority and low-income populations in comparison to the reference community.

Construction

NEPA Analysis

The EIR/EIS determined that most of the construction impacts for the LAXT and Southwest Marine shaft sites would be mitigated; however, construction would result in significant and unavoidable impacts on cultural resources. These impacts are further evaluated to determine if they would be disproportionately borne by low-income and minority populations.

Cultural Resources. Excavation at the LAXT and Southwest Marine shaft sites has the potential to encounter significant buried paleontological resources within the Lakewood Formation. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant. However, these impacts would occur subsurface on paleontological resources. Because the impacts on paleontological resources would not affect human populations, this would not constitute a disproportionately high and adverse effect on minority or low-income populations. Environmental justice impacts would be less than significant.

Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Riser/Diffuser Area – Existing Ocean Outfalls

Aesthetics was the only resource area that would result in a significant and unavoidable impact associated with the existing ocean outfalls. The study area that was identified for the Royal Palms shaft site, which is evaluated under Alternative 4, consists of the population within the viewshed of the existing ocean outfalls. Consequently, the Royal Palms shaft site study area is also applicable to the evaluation of impacts on minority and low-income populations due to activities on the existing ocean outfalls.

Based on a review of the population and income characteristics of the Royal Palms shaft site study area, there is a limited presence of minority populations (see Table 15-7) with 12.5 percent of the population identifying their ethnicity as Hispanic or Latino and 14.9 percent of the population identifying themselves as belonging to a race other than White or European-American. In terms of low-income population, the per capita income of Royal Palms shaft site ($35,056) is much higher than that of the county, and the proportion of population below poverty thresholds (4.0 percent) in the study area is much lower in comparison to the county (see Table 15-6 and Table 15-10). Thus, the study area does not have a greater presence of minority and low-income population in comparison to the reference community.

Construction

NEPA Analysis

The EIR/EIS determined that most of the construction impacts for the existing ocean outfalls would be mitigated; however, construction would result in significant and unavoidable impacts on aesthetic resources (see Table 15-12). Because of the limited minority and low-income populations in the study area, any impacts that would be significant and unavoidable would not be disproportionately higher for

minority and low-income populations. Therefore, environmental justice impacts would be less than significant.

Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

NEPA Impact Determination

Construction at the JWPCP East shaft site for Alternative 1 (Project) would result in environmental impacts that are disproportionately high and adverse on minority and low-income populations. Impacts under NEPA would be significant before mitigation with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

MM AES-3a. Implement visual measures to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment. A mural or similar aesthetic treatment will be applied to the sections of the noise barrier prominently visible to nearby residents and/or recreationists. Appropriate paint type and surfacing materials will be selected to ensure durability of the painted or treated surfaces until the barrier is removed. Barriers will have low-sheen and non-reflective surface materials to reduce the potential for glare. The paint color or aesthetic treatment will be maintained and any graffiti will be removed in a timely manner. During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers will be accepted. Their comments will be evaluated for inclusion in the design to ensure the final treatment meets expectations to the greatest extent feasible.

Residual Impacts

Although MM AES-3a would reduce impacts by improving visual quality of the noise barrier at the JWPCP East shaft site, visual effects associated with the presence of the noise barrier and crane would remain significant during construction. While impacts would affect all individuals within the viewshed, a disproportionately high number of minority and low-income populations would be adversely affected. Residual impacts would be significant and unavoidable.

Impact SOC-4. Would Alternative 1 (Project) cause a substantial change in local employment or the labor force?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

The construction of the onshore portion of the Wilmington to SP Shelf tunnel alignment would generate about 320 construction jobs[1] (see Table 18-13). These construction jobs would further result in 640 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). However, construction of the tunnel is expected to take place over 6.5 years, through 2022. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw.

[1] Number of construction workers was calculated using the assumptions provided in Table 18-13. It was assumed that half of the construction workers on the TraPac shaft site and the Southwest Marine shaft site are working on onshore tunneling and the other half are working on offshore tunneling.

Construction of the onshore tunnel along with the construction of the riser and diffuser would also require specialized construction workers nationally and internationally to relocate to the JOS service area. There would likely be fewer than 100 of these highly specialized workers present during the entire construction period of the project for the various project elements. Direct, indirect, and specialized workers comprise only 0.022 percent of the county's projected employment for 2020 by SCAG. The relocation of these 100 workers may result in the addition of 298 people in the county through 2021.[2] This number comprises only 0.003 percent of the county's projected population for 2020 by SCAG. Thus, the onshore tunnel construction would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

The construction of the offshore portion of the Wilmington to SP Shelf tunnel alignment would generate about 200 construction jobs[3] (see Table 18-13). These construction jobs would further result in 400 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). However, construction of the tunnel is expected to take place over 6.5 years, through 2022. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Construction of the offshore tunnel along with the construction of the riser and diffuser would require specialized construction workers nationally and internationally to relocate to the JOS service area. There would likely be fewer than 100 of these highly specialized workers present during the entire construction period of the project for the various project elements. Direct, indirect, and specialized workers comprise only 0.015 percent of the county's projected employment for 2020 by SCAG. The relocation of these 100 workers may result in the addition of 298 people in the county through 2021[4]. This number comprises only 0.003 percent of the county's projected population for 2020 by SCAG. Thus, the offshore tunnel construction would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

[2] Assuming average household size of 2.98 for county of Los Angeles in U.S. Census 2000 (see Table 15-4).
[3] Number of construction workers was calculated using the assumptions provided in Table 18-13. It was assumed that half of the construction workers on the TraPac shaft site and the Southwest Marine shaft site are working on onshore tunneling and the other half are working on offshore tunneling.
[4] Assuming average household size of 2.98 for county of Los Angeles in U.S. Census 2000 (see Table 15-4).

Shaft Site – JWPCP East

Construction

CEQA Analysis

The construction at the JWPCP East shaft site would generate about 20 construction jobs (see Table 18-13). These construction jobs would further result in 40 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). Construction of the shaft itself would last just 10 to 12 months and another 2 to 5 months to demobilize the site after tunnel construction; however, construction and staging activities related to construction of the tunnel would last from 4 to 8 years at the shaft site. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Thus, construction at the JWPCP East shaft site would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Site – TraPac

Construction

CEQA Analysis

The construction at the TraPac shaft site would generate about 20 construction jobs (see Table 18-13). These construction jobs would further result in 40 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis.) Construction of the shaft itself would last just 10 to 11 months and another 2 to 5 months to demobilize the site after tunnel construction; however, construction and staging activities related to construction of the tunnel would last from 4 to 8 years at the shaft site. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Thus, construction at the TraPac shaft site would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Site – LAXT

Construction

CEQA Analysis

The construction at the LAXT shaft site would generate about 20 construction jobs (see Table 18-13). These construction jobs would further result in 40 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). Construction of the shaft itself would

last just 12 to 15 months and another 2 to 5 months to demobilize the site after tunnel construction; however, construction and staging activities related to construction of the tunnel would last from 4 to 8 years at the shaft site. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Thus, construction at the LAXT shaft site would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Site – Southwest Marine

Construction

CEQA Analysis

The construction at the Southwest Marine shaft site would generate about 20 construction jobs (see Table 18-13). These construction jobs would further result in 40 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). Construction of the shaft itself would last just 10 to 11 months and another 2 to 5 months to demobilize the site after tunnel construction; however, construction and staging activities related to construction of the tunnel would last from 4 to 8 years at the shaft site. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Thus, construction at the Southwest Marine shaft site would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

The construction of the riser and diffuser on the SP Shelf would generate about 15 construction jobs (see Table 18-13). These construction jobs would further result in 30 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). Construction of the riser would last 24 months and another 6 to 12 months to construct the diffuser. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Construction of the riser and diffuser along with tunnel construction would require specialized construction workers nationally and internationally to relocate to the JOS service area. There would likely be fewer than 100 of these highly specialized workers present during the entire construction period of the project for the various project elements. Direct, indirect, and specialized workers comprise only 0.003 percent of the county's projected

employment for 2020 by SCAG. The relocation of these 100 workers may result in an addition of 298 people in the county through 2021[5]. This number comprises only 0.003 percent of the county's projected population for 2020 by SCAG. Thus, construction of the riser and diffuser on the SP Shelf would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

The rehabilitation of the existing ocean outfalls would generate about 10 construction jobs (see Table 18-13). These construction jobs would further result in 20 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). All of the construction work including mobilization, construction, and demobilization would take approximately 9 months. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Construction on the existing ocean outfalls along with tunnel construction would require specialized construction workers nationally and internationally to relocate to the JOS service area. There would likely be fewer than 100 of these highly specialized workers present during the entire construction period of the project for the various project elements. Direct, indirect, and specialized workers comprise only 0.003 percent of the county's projected employment for 2020 by SCAG. The relocation of these 100 workers may result in the addition of 298 people in the county through 2021.[6] This number comprises only 0.003 percent of the county's projected population for 2020 by SCAG. Thus, construction on the existing ocean outfalls would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not cause a substantial change in local employment or the labor force. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

[5] Assuming average household size of 2.98 for county of Los Angeles in U.S. Census 2000 (see Table 15-4).
[6] Assuming average household size of 2.98 for county of Los Angeles in U.S. Census 2000 (see Table 15-4).

NEPA Impact Determination

Construction of Alternative 1 (Project) would not cause a substantial change in local employment or the labor force. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

15.4.3.3 Impact Summary – Alternative 1

As determined in the Preliminary Screening Analysis, all program elements would result in no impacts or less than significant impacts on employment and housing. Additionally, an evaluation of socioeconomics and environmental justice is not required for the program, which is outside the NEPA scope of analysis. Therefore, the program is not evaluated in this EIR/EIS. Impacts on employment, housing, socioeconomics, and environmental justice analyzed in this EIR/EIS for Alternative 1 (Project) are summarized in Table 15-13. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 15-13. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact SOC-3. Would Alternative 1 (Project) result in environmental impacts that are disproportionately high and adverse on minority and low income populations?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-3a. Implement visual measures to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment. A mural or similar aesthetic treatment will be applied to the sections of the noise barrier prominently visible to nearby residents and/or recreationists. Appropriate paint type and surfacing materials will be selected to ensure durability of the painted or treated surfaces until the barrier is removed. Barriers will have low-sheen and non-reflective surface materials to reduce the potential for glare. The paint color or aesthetic treatment will be maintained and any graffiti will be removed in a timely	NEPA Significant and Unavoidable Impact During Construction

Table 15-13 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			manner. During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers will be accepted. Their comments will be evaluated for inclusion in the design to ensure the final treatment meets expectations to the greatest extent feasible.	
TraPac	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact SOC-4. Would Alternative 1 (Project) cause a substantial change in local employment or the labor force?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 15-13 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

15.4.4 Alternative 2

15.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program); program elements would result in no impacts or less than significant impacts on employment and housing. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A). Additionally, an evaluation of socioeconomics and environmental justice is not required for the program, which is outside the NEPA scope of analysis.

15.4.4.2 Project

The impacts for the onshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact SOC-4. Would Alternative 2 (Project) cause a substantial change in local employment or the labor force?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
The construction jobs and indirect jobs generated for the construction of the Wilmington to PV Shelf (offshore) tunnel alignment would the same as for the Wilmington to SP Shelf (offshore) tunnel alignment, as discussed under Alternative 1. The offshore tunnel construction is not anticipated to result in changes in local employment or the labor force. Impacts would be less than significant.

NEPA Analysis
Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
The construction jobs and indirect jobs generated for the construction of the riser and diffuser on the PV Shelf would the same as for the riser and diffuser on the SP Shelf, as discussed under Alternative 1. The construction of the riser and diffuser on the PV Shelf is not anticipated to result in changes in local employment or the labor force. Impacts would be less than significant.

NEPA Analysis
Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

CEQA Impact Determination

Construction of Alternative 2 (Project) would not cause a substantial change in local employment or the labor force. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 2 (Project) would not cause a substantial change in local employment or the labor force. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

15.4.4.3 Impact Summary – Alternative 2

As determined in the Preliminary Screening Analysis, all program elements would result in no impacts or less than significant impacts on employment and housing. Additionally, an evaluation of socioeconomics and environmental justice is not required for the program, which is outside the NEPA scope of analysis. Therefore, the program is not evaluated in this EIR/EIS. Impacts on employment, housing, socioeconomics, and environmental justice analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 15-14. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 15-14. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact SOC-3. Would Alternative 2 (Project) result in environmental impacts that are disproportionately high and adverse on minority and low income populations?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 15-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Significant Impact During Construction	Indirect	MM AES-3a. Implement visual measures to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment. A mural or similar aesthetic treatment will be applied to the sections of the noise barrier prominently visible to nearby residents and/or recreationists. Appropriate paint type and surfacing materials will be selected to ensure durability of the painted or treated surfaces until the barrier is removed. Barriers will have low-sheen and non-reflective surface materials to reduce the potential for glare. The paint color or aesthetic treatment will be maintained and any graffiti will be removed in a timely manner. During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers will be accepted. Their comments will be evaluated for inclusion in the design to ensure the final treatment meets expectations to the greatest extent feasible.	NEPA Significant and Unavoidable Impact During Construction
TraPac	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 15-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact SOC-4. Would Alternative 2 (Project) cause a substantial change in local employment or the labor force?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 15-14 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

15.4.5 Alternative 3

15.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program); program elements would result in no impacts or less than significant impacts on employment and housing. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A). Additionally, an evaluation of socioeconomics and environmental justice is not required for the program, which is outside the NEPA scope of analysis.

15.4.5.2 Project

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as for Alternative 2 (Project). The impacts for the existing ocean outfalls would be the same as for Alternative 1 (Project). Note that Impact SOC-3 analyzes disproportionately high and adverse impacts on minority and low-income populations as required under NEPA; therefore, there is no CEQA analysis provided under Impact SOC-3.

Impact SOC-3. Would Alternative 3 (Project) result in environmental impacts that are disproportionately high and adverse on minority and low-income populations?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

The affected community for the Figueroa/Gaffey to PV Shelf onshore tunnel alignment is considered to be the population residing within the Figueroa/Gaffey to PV Shelf tunnel alignment study area. Based on a review of the population and income characteristics of the study area, there is a presence of minority populations (see Table 15-7) with 47.0 percent of the population identifying their ethnicity as Hispanic or Latino and 42.0 percent of the population identifying themselves as belonging to a race other than White or European-American. In terms of low-income population, the per capita income of the study area ($20,356) is similar to the county, and the proportion of population below poverty thresholds

(17.5 percent) is slightly lower in the study area when compared to the county (see Table 15-6 and Table 15-10). Thus, the study area has a greater presence of minority populations in comparison to the reference community.

Construction

NEPA Analysis

The EIR/EIS determined that most of the construction impacts for the Figueroa/Gaffey to PV Shelf onshore tunnel would be mitigated; however, construction would result in significant and unavoidable impacts on cultural resources. These impacts are further evaluated to determine if they would be disproportionately borne by minority populations.

Cultural Resources. The construction of the Figueroa/Gaffey to PV Shelf onshore tunnel may result in impacts associated with unknown buried paleontological resources that would be significant and could not be mitigated. However, these impacts would occur subsurface on paleontological resources. Because the impacts on paleontological resources would not affect human populations, this would not constitute a disproportionately high and adverse effect on minority populations. Environmental justice impacts would be less than significant.

Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Site – JWPCP West

The affected community for the JWPCP West shaft site is considered to be the population residing within the JWPCP East and JWPCP West shaft sites study area. Based on a review of the population and income characteristics of the study area, there is a presence of minority populations (see Table 15-7) with 34.7 percent of the population identifying their ethnicity as Hispanic or Latino and 72.7 percent of the population identifying themselves as belonging to a race other than White or European-American. In terms of low-income population, the per capita income of the study area ($15,319) is lower than that of the county, and the proportion of population below poverty thresholds (16.0 percent) in the JWPCP East and JWPCP West shaft sites study area is similar to the county (see Table 15-6 and Table 15-10). Thus, the study area has a greater presence of minority and low-income populations in comparison to the reference community.

Construction

NEPA Analysis

The EIR/EIS determined that most of the construction impacts at the JWPCP West shaft site would be mitigated; however, construction would result in significant and unavoidable impacts on cultural resources. These impacts are further evaluated to determine if they would be disproportionately borne by low-income and minority populations.

Cultural Resources. Excavation at the JWPCP West shaft site has the potential to encounter significant buried paleontological resources within the Lakewood Formation. MM CUL-3 would be implemented but would not completely prevent the potential destruction of unknown significant paleontological resources during construction, and impacts would remain significant. However, these impacts would occur subsurface on paleontological resources. Because the impacts on paleontological resources would not affect human populations, this impact would not constitute a disproportionately high and adverse effect on minority or low-income populations. Environmental justice impacts would be less than significant.

Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Site – Angels Gate

The affected community for the Angels Gate shaft site is considered to be the population residing within the Angels Gate shaft site study area. Based on a review of the population and income characteristics of the study area, there is a limited presence of minority populations (see Table 15-7) with only 17.5 percent of the population identifying their ethnicity as Hispanic or Latino and only 20.2 percent of the population identifying themselves as belonging to a race other than White or European-American. In terms of low-income population, the per capita income of the study area ($32,307) is much higher than that of the county, and the proportion of population below poverty thresholds (7.1 percent) in Angels Gate shaft site study area is much lower in comparison to the county (see Table 15-6 and Table 15-10). Thus, the study area does not have a greater presence of minority and low-income populations in comparison to the reference community.

Construction

NEPA Analysis

The EIR/EIS determined that most of the construction impacts at the Angels Gate shaft site would be mitigated; however, construction would result in significant and unavoidable impacts on aesthetics and cultural resources (see Table 15-12). Because of the limited minority and low-income populations in the study area, any impacts that would be significant and unavoidable would not be disproportionately higher for minority and low-income populations. Therefore, environmental justice impacts would be less than significant.

Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

NEPA Impact Determination

Construction and operation of Alternative 3 (Project) would not result in environmental impacts that are disproportionately high and adverse on minority and low-income populations. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact SOC-4. Would Alternative 3 (Project) cause a substantial change in local employment or the labor force?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

The construction of the onshore portion of the Figueroa/Gaffey to PV Shelf tunnel alignment would generate about 160 construction jobs[7] (see Table 18-23). These construction jobs would further result in 320 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). However, construction of the tunnel is expected to take place over 5 years. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Construction of the onshore tunnel along with the construction of riser and diffuser would also require specialized construction workers nationally and internationally to relocate to the JOS service area. There would likely be fewer than 100 of these highly specialized workers present during the entire construction period of the project for the various project elements. Direct, indirect, and specialized workers comprise only 0.015 percent of the county's projected employment for 2020 by SCAG. The relocation of these 100 workers may result in the addition of 298 people in the county through 2021[8]. This number comprises only 0.003 percent of the county's projected population for 2020 by SCAG. Thus, the onshore tunnel construction would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

The construction of the offshore portion of the Figueroa/Gaffey to PV Shelf tunnel alignment would generate about 160 construction jobs[9] (see Table 18-23). These construction jobs would further result in 320 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). However, construction of the tunnel is expected to take place over 5 years. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Construction of the

[7] Number of construction workers was calculated using the assumptions provided in Table 18-23. It was assumed that half of the construction workers on the Angels Gate shaft site are working on onshore tunneling and the other half are working on offshore tunneling.
[8] Assuming average household size of 2.98 for county of Los Angeles in U.S. Census 2000 (see Table 15-4).
[9] Number of construction workers was calculated using the assumptions provided in Table 18-23. It was assumed that half of the construction workers on the Angels Gate shaft site are working on onshore tunneling and the other half are working on offshore tunneling.

offshore tunnel along with the construction of the riser and diffuser would require specialized construction workers nationally and internationally to relocate to the JOS service area. There would likely be fewer than 100 of these highly specialized workers present during the entire construction period of the project for the various project elements. Direct, indirect, and specialized workers comprise only 0.015 percent of the county's projected employment for 2020 by SCAG. The relocation of these 100 workers may result in an addition of 298 people in the county through 2021[10]. This number comprises only 0.003 percent of the county's projected population for 2020 by SCAG. Thus, the offshore tunnel construction would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Site – JWPCP West

Construction

CEQA Analysis

The construction at the JWPCP West shaft site would generate about 20 construction jobs (see Table 18-23). These construction jobs would further result in 40 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). Construction of the shaft itself would last just 10 to 12 months and another 2 to 5 months to demobilize the site after tunnel construction; however, construction and staging activities related to construction of the tunnel would last from 4 to 6.5 years at the shaft site. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Thus, construction at the JWPCP West shaft site would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Site – Angels Gate

Construction

CEQA Analysis

The construction at the Angels Gate shaft site would generate about 20 construction jobs (see Table 18-23). These construction jobs would further result in 40 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). Construction of the shaft itself would last just 8 to 9 months and another 2 to 5 months to demobilize the site after tunnel construction; however, construction and staging activities related to construction of the tunnel would last from 4 to 6.5 years at the shaft site. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor

[10] Assuming average household size of 2.98 for county of Los Angeles in U.S. Census 2000 (see Table 15-4).

(5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Thus, construction at the Angels Gate shaft site would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not cause a substantial change in local employment or the labor force. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not cause a substantial change in local employment or the labor force. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

15.4.5.3 Impact Summary – Alternative 3

As determined in the Preliminary Screening Analysis, all program elements would result in no impacts or less than significant impacts on employment and housing. Additionally, an evaluation of socioeconomics and environmental justice is not required for the program, which is outside the NEPA scope of analysis. Therefore, the program is not evaluated in this EIR/EIS. Impacts on employment, housing, socioeconomics, and environmental justice analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 15-15. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 15-15. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact SOC-3. Would Alternative 3 (Project) result in environmental impacts that are disproportionately high and adverse on minority and low-income populations?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact SOC-4. Would Alternative 3 (Project) cause a substantial change in local employment or the labor force?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 15-15 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

15.4.6 Alternative 4 – Recommended Alternative

15.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program); program elements would result in no impacts or less than significant impacts on employment and housing. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A). Additionally, an evaluation of socioeconomics and environmental justice is not required for the program, which is outside the NEPA scope of analysis.

15.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years. The construction impacts for the rehabilitation of the existing ocean outfalls for Alternative 4 (Project) would be the same as for Alternative 1 (Project). Note that Impact SOC-3 analyzes disproportionately

high and adverse impacts on minority and low-income populations as required under NEPA; therefore, there is no CEQA analysis provided under Impact SOC-3.

Impact SOC-3. Would Alternative 4 (Project) result in environmental impacts that are disproportionately high and adverse on minority and low-income populations?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

The affected community for the Figueroa/Western to Royal Palms onshore tunnel alignment is considered to be the population residing within the Figueroa/Western to Royal Palms tunnel alignment study area. Based on a review of the population and income characteristics of the study area, there is a limited presence of minority populations (see Table 15-7) with 33.7 percent of population identifying their ethnicity as Hispanic or Latino and 31.4 percent of the population identifying themselves as belonging to a race other than White or European-American. In terms of low-income population, the per capita income of the study area ($26,537) is higher than that of the county, and the proportion of population below poverty thresholds (10.4 percent) is lower in the study area when compared to the county (see Table 15-6 and Table 15-10). Thus, the study area does not have a greater presence of minority or low-income populations in comparison to the reference community.

Construction

NEPA Analysis

The EIR/EIS determined that most of the construction impacts for the Figueroa/Western to Royal Palms onshore tunnel would be mitigated; however, construction would result in significant and unavoidable impacts on cultural resources. Because of the limited minority and low-income populations in the study area, any impacts that would be significant and unavoidable would not be disproportionately higher for minority and low-income populations. Therefore, environmental justice impacts would be less than significant.

Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

Shaft Site – Royal Palms

The affected community for the Royal Palms shaft site is considered to be the population residing within the Royal Palms shaft site study area. Based on a review of the population and income characteristics in the study area, there is a limited presence of minority populations (see Table 15-7) with 12.5 percent of population identifying their ethnicity as Hispanic or Latino and only 14.9 percent of the population identifying themselves as belonging to a race other than White or European-American. In terms of low-income population, the per capita income of the study area ($35,056) is much higher than that of the county, and the proportion of population below poverty thresholds (4.0 percent) in the study area is much lower in comparison to the county (see Table 15-6 and Table 15-10). Thus, the study area does not have a greater presence of minority or low-income populations in comparison to the reference community.

Construction

NEPA Analysis

The EIR/EIS determined that most of the construction impacts at the Royal Palms shaft site would be mitigated; however, construction would result in significant and unavoidable impacts on aesthetics and cultural resources (see Table 15-12). Because of the limited minority and low-income populations in the

study area, any impacts that would be significant and unavoidable would not be disproportionately higher for minority and low-income populations. Therefore, environmental justice impacts would be less than significant.

Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

NEPA Impact Determination

Construction and operation of Alternative 4 (Project) would not result in environmental impacts that are disproportionately high and adverse on minority and low-income populations. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact SOC-4. Would Alternative 4 (Project) cause a substantial change in local employment or the labor force?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

The construction of the Figueroa/Western to Royal Palms onshore tunnel would generate about 120 construction jobs[11] (see Table 18-30). These construction jobs would further result in 240 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). However, construction of the tunnel is expected to take place over 4 years. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Construction of the tunnel alignment would also require specialized construction workers nationally and internationally to relocate to the JOS service area. There would likely be fewer than 100 of these highly specialized present during the entire construction period of the project for the various project elements. Direct, indirect, and specialized workers comprise only 0.001 percent of the county's projected employment for 2020 by SCAG. The relocation of these 100 workers may result in an addition of 298 people in the county through 2021[12]. This number comprises only 0.003 percent of the county's projected population for 2020 by SCAG. Thus, the onshore tunnel construction would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

[11] Number of construction workers was calculated using the assumptions provided in Table 18-30.
[12] Assuming average household size of 2.98 for county of Los Angeles in U.S. Census 2000 (see Table 15-4).

Shaft Site – Royal Palms

Construction

CEQA Analysis

The construction at the Royal Palms shaft site would generate about 30 construction jobs (see Table 18-30). These construction jobs would further result in 60 indirect jobs (2 jobs for every construction job based on RIMS II model output of U.S. Bureau of Economic Analysis). Construction of the shaft itself would last just 6 to 9 months and another 2 to 5 months to demobilize the site after tunnel construction; however, construction and staging activities related to construction of the tunnel would last from 4 to 5 years at the shaft site. The number of construction workers employed and working on site would vary over the course of the construction period. The county has a large pool of construction labor (5.1 percent of employed people were in the construction industry in 2000; see Table 15-5) from which to draw. Thus, construction at the Royal Palms shaft site would not result in a substantial change in the local labor force and employment. Impacts would be less than significant.

NEPA Analysis

Analysis under NEPA would be the same as described for the CEQA analysis. Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in Section 3.5.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not cause a substantial change in local employment or the labor force. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not cause a substantial change in local employment or the labor force. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

15.4.6.3 Impact Summary – Alternative 4

As determined in the Preliminary Screening Analysis, all program elements would result in no impacts or less than significant impacts on employment and housing. Additionally, an evaluation of socioeconomics and environmental justice is not required for the program, which is outside the NEPA scope of analysis. Therefore, the program is not evaluated in this EIR/EIS. Impacts on employment, housing, socioeconomics, and environmental justice analyzed in this EIR/EIS for Alternative 4 (Project) are

summarized in Table 15-16. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 15-16. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact SOC-3. Would Alternative 4 (Project) result in environmental impacts that are disproportionately high and adverse on minority and low-income populations?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA N/A During Construction	N/A	N/A	CEQA N/A During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact SOC-4. Would Alternative 4 (Project) cause a substantial change in local employment or the labor force?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 15-16 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

15.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an environmental impact report (EIR) must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the water reclamation plants (WRPs), as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

15.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for the conveyance system, plant expansion at the San Jose Creek Water Reclamation Plant (SJCWRP), WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994). Program elements would result in no impacts or less than significant impacts on employment and housing. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A). Because the program is outside the NEPA scope of analysis, an evaluation of socioeconomic and environmental justice impacts is not required for Alternative 5 (Program).

15.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. Impacts on employment and housing would not occur under Alternative 5 (Project). Because Alternative 5 is the CEQA no-project alternative, an evaluation of socioeconomic and environmental justice impacts is not required for Alternative 5 (Project).

15.4.7.3 Impact Summary – Alternative 5

Alternative 5 would result in no impacts on employment and housing. As discussed in the Preliminary Screening Analysis, the program would result in no impacts or less than significant impacts on employment and housing; therefore, the program is not evaluated in this EIR/EIS. Additionally, there would be no significant impacts on employment and housing for Alternative 5 (Project). Because Alternative 5 is the CEQA no-project alternative, an evaluation of socioeconomic and environmental justice impacts is not required for Alternative 5.

15.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an EIS must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Section 3.4.1.6. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

15.4.8.1 Program

The program elements are outside the NEPA scope of analysis.

15.4.8.2 Project

The impacts for Alternative 6 (Project) would be the same as for Alternative 5 (Project) for employment and housing, and there would be no impacts. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites under Alternative 6. As a consequence, there would be a greater potential for emergency discharges or sewer overflows into various water courses. Socioeconomics and environmental justice are evaluated under NEPA for greater potential for emergency discharges or sewer overflows into various water courses.

The human impacts of Alternative 6 in case of emergency discharge into the Wilmington Drain or a sewer overflow entering various water courses, such as the Dominguez Channel and the Los Angeles River, would result in temporary limitations on recreational use of the Los Angeles Harbor and neighboring beaches due to significant and unavoidable impacts on five resource areas.

- Geology, soils, and mineral resources. Mudslides, ground failure, and unstable earth conditions in unlined portions of the Wilmington Drain, Machado Lake, and the various areas along the JOS where overflows may occur would reduce recreation opportunities in receiving waters including the Los Angeles River, Los Angeles Harbor, and surrounding waters, such as Cabrillo Beach.
- Hydrology. Emergency discharge of secondary effluent would likely result in violations of total maximum daily loads (TMDL) at Los Angeles Harbor and Machado Lake, toxic pollutants violation at the Los Angeles and Long Beach Harbors, and Los Angeles County Municipal Separate Storm Sewer Systems permit violations. The emergency discharge could also affect the existing drainage pattern resulting in substantial erosion or siltation and water quality impacts on receiving waters. A sewer overflow would likely result in a violation of the JWPCP's NPDES permit, as well as TMDLs for the Wilmington Drain, the Dominguez Channel, and the Los Angeles and Long Beach Harbors.
- Marine environment. Emergency discharge of secondary effluent or a sewer overflow would be considered a violation of the JWPCP's NPDES permit and, therefore, would affect the beneficial uses of the Wilmington Drain, Dominguez Channel, and the Los Angeles River, all of which discharge into the Los Angeles Harbor and surrounding waters, such as Cabrillo Beach.
- Recreation. There would be a substantial loss or diminished quality of recreational opportunities due to impacts on water quality. Impacts could include the closure of facilities, such as Cabrillo Beach and Cabrillo Pier, resulting in loss of recreational uses such as swimming, wind surfing, and other water-based activities.
- Utilities, service systems, and energy. A discharge of secondary effluent into the Wilmington Drain or a sewer overflow would result in exceeding wastewater treatment requirements of the RWQCB and, therefore, would affect the beneficial uses of the Wilmington Drain, Dominguez Channel, and the Los Angeles River, all of which discharge into the Los Angeles Harbor and surrounding waters, such as Cabrillo Beach.

Although significant and unavoidable impacts on recreational use of the Los Angeles Harbor and neighboring beaches would occur, these are regional resources, and impacts would not be disproportionally high and adverse on minority and low-income populations. Impacts on the reference community (the Los Angeles County study area) and affected community would be same; therefore, environmental justice impacts would be less than significant.

15.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. As discussed in Section 15.4.8.2, there would be no impacts for Alternative 6 (Project) on employment and housing, and impacts on environmental justice would be less than significant. Therefore, there would be no significant impacts on employment, housing, socioeconomics, and environmental justice for Alternative 6.

15.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on employment, housing, socioeconomics, and environmental justice resulting from the construction and/or operation of program and/or project elements is provided in Table 15-17. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 15-17. Comparison of Significant Impacts and Mitigation for Employment, Housing, Socioeconomics, and Environmental Justice

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 1 (Project)			
Impact SOC-3. Would Alternative 1 (Project) result in environmental impacts that are disproportionately high and adverse on minority and low income populations?			
Shaft Site – JWPCP East	CEQA N/A During Construction	N/A	CEQA N/A During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-3a. Implement visual measures to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment. A mural or similar aesthetic treatment will be applied to the sections of the noise barrier prominently visible to nearby residents and/or recreationists. Appropriate paint type and surfacing materials will be selected to ensure durability of the painted or treated surfaces until the barrier is removed. Barriers will have low-sheen and non-reflective surface materials to reduce the potential for glare. The paint color or aesthetic treatment will be maintained and any graffiti will be removed in a timely manner. During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers will be accepted. Their comments will be evaluated for inclusion in the design to ensure the final treatment meets expectations to the greatest extent feasible.	NEPA Significant and Unavoidable Impact (Indirect) During Construction
Alternative 2 (Project)			
Impact SOC-3. Would Alternative 2 (Project) result in environmental impacts that are disproportionately high and adverse on minority and low income populations?			
Shaft Site – JWPCP East	CEQA N/A During Construction	N/A	CEQA N/A During Construction
	NEPA Significant Impact (Indirect) During Construction	MM AES-3a	NEPA Significant and Unavoidable Impact (Indirect) During Construction

Chapter 16
PUBLIC SERVICES

16.1 Introduction

This chapter describes existing and planned public services and facilities in the Joint Outfall System (JOS) service area. It analyzes potential impacts on existing emergency response, emergency preparedness, and emergency evacuation plans that would result from the implementation of program and project elements, and determines the significance of those impacts.

Public services information was compiled mainly from questionnaires received from the public service providers in the service area. The locations of these providers and their services and planning efforts to accommodate anticipated growth are summarized in Appendix 16-A, which also includes copies of the questionnaires and provider responses.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the public services impact analysis for each program element is summarized by alternative in Table 16-1.

Table 16-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	-
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	C
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 16-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	C
Biosolids Management	X	X	X	X	X	N/A	O	-
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 16-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 16.4.7 for a discussion of the No-Project Alternative.
[b] See Section 16.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the public services impact analysis for each project element is summarized by alternative in Table 16-2.

Table 16-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	C
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	C
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	C
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	C
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	C,O	C
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C
JWPCP West			X	X	N/A	N/A	C,O	C
TraPac	X	X			N/A	N/A	C,O	C
LAXT	X	X			N/A	N/A	C,O	C
Southwest Marine	X	X			N/A	N/A	C,O	C
Angels Gate			X		N/A	N/A	C,O	C
Royal Palms				X	N/A	N/A	C,O	C
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	C,O	C
PV Shelf		X	X		N/A	N/A	C,O	C
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	C

Table 16-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**

[a] See Section 16.4.7 for a discussion of the No-Project Alternative.
[b] See Section 16.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

Other services analyzed in this EIR/EIS are utilities (Chapter 20), recreation (Chapter 17), marine transportation (Chapter 19), and handling and transport of hazardous materials and hazardous wastes (Chapter 10). A discussion of schools is not provided in this chapter because program and project elements would have no impact on schools or school districts. For additional information regarding schools, refer to the Preliminary Screening Analysis (Appendix 1-A) and Appendix 16-A.

16.2 Environmental Setting

16.2.1 Regional Setting

For the Clearwater Program, the regional setting spans the central, southern, and eastern portions of Los Angeles County. Emergency response and preparedness providers for these areas are listed below and summarized in Appendix 16-A. These fire and police agencies are discussed because of their role in implementing emergency response, preparedness, and/or evacuation plans and procedures.

- Los Angeles County Sheriff's Department
- Los Angeles Police Department
- Los Angeles Port Police
- Long Beach Police Department
- Pomona Police Department
- Los Angeles County Fire Department
- Los Angeles Fire Department
- Long Beach Fire Department
- United States Coast Guard (USCG)

16.2.2 Program Setting

The program elements are located within multiple jurisdictions of public service providers for emergency and security, as summarized in Table 16-3.

Table 16-3. Emergency and Security Public Service Providers (Program)

Program Element Location	Fire Service Provider	Security/Police Service Provider
SJCWRP	Los Angeles County Fire Department	Los Angeles County Sherriff's Department
POWRP	Los Angeles County Fire Department	Pomona Police Department
LCWRP	Los Angeles County Fire Department	Los Angeles County Sherriff's Department
LBWRP	Long Beach Fire Department	Long Beach Police Department
WNWRP	Los Angeles County Fire Department	El Monte Police Department
JWPCP	(Discussed under Project Setting)	

San Jose Creek Water Reclamation Plant

The Industry Station of the Los Angeles County Sheriff's Department provides primary service to the San Jose Creek Water Reclamation Plant (SJCWRP). The station is located at 150 North Hudson Avenue in the City of Industry, approximately 3.6 miles from the plant. The SJCWRP is also located within an unspecified beat/patrol area, and the estimated emergency response time is approximately 10 minutes. (Tse pers. comm.)

Fire Stations 87 and 90 of the Los Angeles County Fire Department are the jurisdictional primary responding stations for the SJCWRP. The stations are located at 140 South Second Avenue in the City of Industry, approximately 2.5 miles from the plant, and at 10115 East Rush Street in the city of South El Monte, approximately 2.3 miles from the plant, respectively. Fire Station 87 is staffed with a four-person engine company, and Fire Station 90 is staffed with a three-person engine company and a two-person paramedic squad. Fire Station 87 is also a secondary responding station, as is Fire Station 168, which is located at 3207 Cogswell Road in the city of El Monte and is staffed with a three-person engine company.[1] The Los Angeles County Fire Department uses national guidelines of a 5-minute response time for the first arriving unit for fire and emergency medical services (EMS) and 8 minutes for the advanced life support unit in urban areas. (Todd pers. comm.)

Pomona Water Reclamation Plant

The Main Station of the Pomona Police Department provides primary service to the Pomona Water Reclamation Plant (POWRP). The station is located at 490 West Mission Boulevard in the city of Pomona, approximately 2.4 miles from the plant. The POWRP is also located within an unspecified beat/patrol area. The Pomona Police Department operates at a 0.9 officer per 1,000 population ratio, and the estimated emergency response time to the plant is less than 4 minutes. (Wright pers. comm.)

Fire Station 184 of the Los Angeles County Fire Department is the jurisdictional primary responding station for the POWRP. It is located at 1980 West Orange Grove in the city of Pomona, approximately 0.85 mile from the plant and is staffed with a three-person engine company. Fire Station 187 of the Los Angeles County Fire Department is the secondary responding station and is located at 3325 Temple Avenue in the city of Pomona, approximately 1.9 miles from the POWRP. It is staffed with a four-person combination engine/ladder truck apparatus. The estimated response times to the plant comply with national guidelines of 5 minutes for the first arriving unit for fire and EMS and 8 minutes for the advanced life support unit. (Todd pers. comm.)

Los Coyotes Water Reclamation Plant

The Cerritos Station of the Los Angeles County Sheriff's Department provides primary service to the Los Coyotes Water Reclamation Plant (LCWRP). The station is located at 18135 Bloomfield Avenue in the

[1] For the purposes of this chapter, secondary station(s) is assumed to be another station that could respond to a specific location if the closest station (considered the primary station) cannot respond.

city of Cerritos, approximately 4 miles from the plant. The LCWRP is also located within an unspecified beat/patrol area, and the estimated emergency response time to the plant is approximately 3.6 minutes. (Tse pers. comm.)

Fire Station 115 of the Los Angeles County Fire Department is the jurisdictional primary responding station for the LCWRP. It is located at 11317 Alondra Boulevard in the city of Norwalk, approximately 1.2 miles from the plant. It is staffed with two four-person engine companies. Fire Station 98 of the Los Angeles County Fire Department is the secondary responding station and is located at 9814 Maplewood Avenue in the city of Bellflower, approximately 2.3 miles from the LCWRP. It is staffed with a three-person engine company and a two-person paramedic squad. Estimated response times to the plant comply with national guidelines of 5-minutes for the first arriving unit for fire and EMS and 8 minutes for the advanced life support unit. (Todd pers. comm.)

Long Beach Water Reclamation Plant

The East Division of the Long Beach Police Department provides primary service to the Long Beach Water Reclamation Plant (LBWRP). It is located at 4800 Los Coyotes Diagonal in the city of Long Beach, approximately 4.4 miles from the plant. The LBWRP is also located in beat/patrol area 18, which is staffed with a minimum of one police officer for every watch to ensure 24-hour police coverage. It is the Long Beach Police Department's goal to respond to emergency and Priority 1 calls in 5 minutes or less. (Levy pers. comm.)

Fire Station 5 of the Long Beach Fire Department is the jurisdictional primary responding station for the LBWRP. The station is located at 7575 East Wardlow Road in the city of Long Beach, approximately 3.2 miles from the plant. It is staffed with a four-person engine company. The average unit response time is between approximately 5 minutes and 8 minutes. Fire Station 18 of the Long Beach Fire Department is the secondary responding station and is located at 3361 Palo Verde Avenue in the city of Long Beach, approximately 3.2 miles from the LBWRP. It is staffed with a four-person engine company. The average unit response time is approximately 7 minutes. (Portolan pers. comm.)

Joint Water Pollution Control Plant

The Carson Station of the Los Angeles County Sheriff's Department provides primary service to the JWPCP. The station is located at 21356 South Avalon Boulevard in the city of Carson, approximately 2 miles from the plant. The JWPCP is also located within an unspecified beat/patrol area, and the estimated emergency response time is almost immediate. (Tse pers. comm.)

Fire Station 36 of the Los Angeles County Fire Department is the jurisdictional primary responding station for the JWPCP. It is located at 127 West 223rd Street in the city of Carson, approximately 2.3 miles from the plant. Fire Station 36 is staffed with two 4-person engine companies and a 2-person paramedic squad. Fire Station 127 of the Los Angeles County Fire Department is the secondary responding station and is located at 2049 223rd Street in the city of Carson, approximately 3.6 miles from the plant. Fire Station 127 is staffed with a 6-person light force. Estimated response times to the JWPCP comply with national guidelines of 5-minutes for the first arriving unit for fire and EMS and 8 minutes for the advanced life support unit. (Todd pers. comm.)

16.2.3 Project Setting

The project elements are located within multiple jurisdictions of public service providers for emergency and security, as summarized in Table 16-4.

Table 16-4. Emergency and Security Public Service Providers (Project)

Project Element	Fire Service Provider	Security/Police Service Provider
Tunnel Alignment		
Wilmington to SP Shelf	Los Angeles County Fire Department Los Angeles Fire Department	Los Angeles County Sherriff's Department Los Angeles Port Police USCG
Wilmington to PV Shelf	Los Angeles County Fire Department Los Angeles Fire Department	Los Angeles County Sherriff's Department Los Angeles Port Police USCG
Figueroa/Gaffey to PV Shelf	Los Angeles County Fire Department Los Angeles Fire Department	Los Angeles County Sherriff's Department Los Angeles Police Department
Figueroa/Western to Royal Palms	Los Angeles County Fire Department Los Angeles Fire Department	Los Angeles County Sherriff's Department Los Angeles Police Department
Shaft Site		
JWPCP East	Los Angeles County Fire Department	Los Angeles County Sherriff's Department
JWPCP West	Los Angeles County Fire Department Los Angeles Fire Department	Los Angeles County Sherriff's Department
TraPac	Los Angeles Fire Department	Los Angeles Port Police
LAXT	Los Angeles Fire Department	Los Angeles Port Police
Southwest Marine	Los Angeles Fire Department	Los Angeles Port Police
Angels Gate	Los Angeles Fire Department	Los Angeles Police Department
Royal Palms	Los Angeles Fire Department	Los Angeles Police Department
Riser/Diffuser Area		
SP Shelf	N/A	USCG
PV Shelf	N/A	USCG
Existing Ocean Outfalls	N/A	USCG
N/A = not applicable		

16.2.3.1 Tunnel Alignment

The tunnel alignments would extend through multiple police and fire jurisdictions. These are identified in Table 16-4. Access to the tunnels could only be gained via the shaft sites; therefore, public service providers for the shaft sites would also service the tunnel alignments and are described in the following section.

16.2.3.2 Shaft Site

JWPCP East

The Carson Station of the Los Angeles County Sheriff's Department would provide primary service to the JWPCP East shaft site. The station is located at 21356 South Avalon Boulevard in the city of Carson, approximately 3 miles from the shaft site. The shaft site is also located within an unspecified beat/patrol area, and the estimated emergency response time would be almost immediate. (Tse pers. comm.)

Fire Station 36 of the Los Angeles County Fire Department would be the jurisdictional primary responding station for the JWPCP East shaft site. The station is located at 127 West 223rd Street in the city of Carson, approximately 1.8 miles from the shaft site. The station is staffed with two four-person engine companies and a two-person paramedic squad. Fire Station 127 of the Los Angeles County Fire Department would be the secondary responding station and is located at 2049 East 223rd Street in the city of Carson, approximately 3.6 miles from the shaft site. It is staffed with a six-person light force. The

estimated response times to the shaft site would comply with national guidelines of 5 minutes for the first arriving unit for fire and EMS and 8 minutes for the advanced life support unit. (Todd pers. comm.)

JWPCP West

The Carson Station of the Los Angeles County Sheriff's Department would provide primary service to the JWPCP West shaft site. The station is located at 21356 South Avalon Boulevard in the city of Carson, approximately 3 miles from the shaft site. The shaft site is also located within an unspecified beat/patrol area, and the estimated emergency response time would be almost immediate. (Tse pers. comm.)

There would be two primary jurisdictional responding fire stations for the JWPCP West shaft site. Fire Station 36 of the Los Angeles County Fire Department would be the first primary responding station for the JWPCP West shaft site north of Lomita Boulevard. The station is located at 127 West 223rd Street in the city of Carson, approximately 2.3 miles from the shaft site. It is staffed with two four-person engine companies and a two-person paramedic squad. Fire Station 127 of the Los Angeles County Fire Department would be the secondary responding station for the JWPCP West shaft site north of Lomita Boulevard. The station is located at 2049 East 223rd Street in the city of Carson, approximately 3.6 miles from the shaft site. It is staffed with a six-person light force. The estimated response times to the shaft site would comply with national guidelines of 5 minutes for the first arriving unit for fire and EMS and 8 minutes for the advanced life support unit. (Todd pers. comm.)

Fire Station 85 of the Los Angeles Fire Department would be the second primary responding station for the JWPCP West shaft site south of Lomita Boulevard. The station is located at 1331 West 253rd Street in Harbor City, approximately 1.2 miles from the shaft site. It consists of an urban search and rescue vehicle, a truck, two engines, and a rescue ambulance, and has a total of 12 members. Fire Station 38 of the Los Angeles Fire Department would be the secondary responding station for the JWPCP West shaft site south of Lomita Boulevard. The station is located at 124 East I Street in the community of Wilmington, approximately 2.4 miles from the shaft site. It consists of a truck, two engine companies, basic life support, a rescue ambulance, and advanced life support. The estimated emergency response time for service to the shaft site would be approximately 4 to 6 minutes. (Fry pers. comm.; Herrera pers. comm. 2010b.)

TraPac

The Main Station of the Los Angeles Port Police would provide primary service to the Trans Pacific Container Service Corporation (TraPac) shaft site. The station is located at 425 South Palos Verdes Street in the community of San Pedro, approximately 3.1 miles from the shaft site. The shaft site is also located within an unspecified beat/patrol area. The estimated emergency response time to the shaft site would be 3 minutes. (Provinchain pers. comm. 2010a.)

Fire Station 38 of the Los Angeles Fire Department would be the jurisdictional primary responding station for the TraPac shaft site. Fire Station 38 is located at 124 East I Street in the community of Wilmington, approximately 1.4 miles from the shaft site. It consists of a truck, two engine companies, basic life support, a rescue ambulance, and advanced life support. Fire Stations 48 and 85 of the Los Angeles Fire Department would respond to this site as well. Fire Station 48 is located at 1601 South Grand Avenue in the community of San Pedro, approximately 3.9 miles from the shaft site. It houses a hazardous materials taskforce, which consists of a hazardous materials squad, the taskforce, and a rescue ambulance squad, and has a total of 16 members. Fire Station 85 is located at 1331 West 253rd Street in Harbor City, approximately 3 miles from the shaft site. It consists of an urban search and rescue vehicle, a truck, two engines, and a rescue ambulance, and has a total of 12 members. Fire Stations 36 and 49 of the Los Angeles Fire Department would be the secondary responding stations. Fire Station 36 is located at 1005 North Gaffey Street in the community of San Pedro, approximately 2.2 miles from the shaft site.

It has one engine, one paramedic rescue ambulance, one foam carrier, and one reserve suburban battalion. Fire Station 49 is located at 400 Yacht Street, Berth 194 in the Port of Los Angeles, approximately 1.3 miles from the shaft site. It has two fire boats, one engine, one EMT rescue ambulance, and one battalion chief suburban. The estimated emergency response time for service to the shaft site would be approximately 4 to 6 minutes. (Herrera pers. comm. 2010a, 2010b; Fry pers. comm.; LAFD 2010a, 2010b.)

LAXT

The Main Station of the Los Angeles Port Police would provide primary service to the Los Angeles Export Terminal (LAXT) shaft site. The station is located at 425 South Palos Verdes Street in the community of San Pedro, approximately 3.2 miles from the shaft site. The shaft site is also located within an unspecified beat/patrol area. The estimated emergency response time to the shaft site would be 3 minutes. (Provinchain pers. comm. 2010a.)

Fire Station 40 of the Los Angeles Fire Department would be the jurisdictional primary responding station for the LAXT shaft site. Fire Station 40 is located at 330 Ferry Street in the Port of Los Angeles, less than 1 mile from the shaft site. It is equipped with a single engine company, basic life support, and an ambulance. Fire Stations 48 and 85 of the Los Angeles Fire Department would respond to this site as well. Fire Station 48 is located at 1601 South Grand Avenue in the community of San Pedro, approximately 4.5 miles from the shaft site. It consists of an urban search and rescue vehicle, a truck, two engines, and a rescue ambulance, and has a total of 12 members. Fire Station 85 is located at 1331 West 253rd Street in Harbor City, approximately 6.3 miles from the shaft site. It consists of an urban search and rescue vehicle, a truck, two engines, and a rescue ambulance, and has a total of 12 members. Fire Stations 38 and 49 of the Los Angeles Fire Department would be the secondary responding stations. Fire Station 38 is located at 124 East I Street in the community of Wilmington, approximately 6.5 miles from the shaft site. Fire Station 49 is located at 400 Yacht Street, Berth 194 in the Port of Los Angeles, approximately 5.6 miles from the shaft site. The estimated emergency response time to the shaft site from these various stations would be approximately 4 to 6 minutes. (Herrera pers. comm. 2010a, 2010b; Fry pers. comm.; LAFD 2010a, 2010b.)

Southwest Marine

The Main Station of the Los Angeles Port Police would provide primary service to the Southwest Marine shaft site. It is located at 425 South Palos Verdes Street in the community of San Pedro, approximately 4.7 miles from the shaft site. The shaft site property is controlled by the Port of Los Angeles for use in movie and filming activities. Therefore, the Los Angeles Port Police would provide access and security to this shaft site during filming operations. The shaft site is located within an unspecified beat/patrol area. The estimated emergency response time to the shaft site would be 3 minutes. (Provinchain pers. comm. 2010a.)

Fire Station 40 of the Los Angeles Fire Department would be the jurisdictional primary responding station for the Southwest Marine shaft site. Fire Station 40 is located at 330 Ferry Street in the Port of Los Angeles, approximately 1.7 miles from the shaft site. It is equipped with a single engine company, basic life support, and an ambulance. Fire Stations 48 and 85 of the Los Angeles Fire Department would respond to this site as well. Fire Station 48 is located at 1601 South Grand Avenue in the community of San Pedro, approximately 5.9 miles from the shaft site. It houses a hazardous materials taskforce, which consists of a hazardous materials squad, the taskforce, and a rescue ambulance, and has a total of 16 members. Fire Station 85 is located at 1331 West 253rd Street in Harbor City, approximately 8.7 miles from the shaft site. It consists of an urban search and rescue vehicle, a truck, two engines, and a rescue ambulance, and has a total of 12 members. Fire Stations 38 and 49 of the Los Angeles Fire Department would be the secondary responding stations. Fire Station 38 is located at 124 East I Street in the

community of Wilmington, approximately 6.2 miles from the shaft site. Fire Station 49 is located at 400 Yacht Street, Berth 194 in the Port of Los Angeles, approximately 7.0 miles from the shaft site. The estimated emergency response time for service to the shaft site would be approximately 4 to 6 minutes. (Herrera pers. comm. 2010a, 2010b; Fry pers. comm.; LAFD 2010a, 2010b.)

Angels Gate and Royal Palms

The Angels Gate and Royal Palms shaft sites are within the jurisdiction of the Los Angeles Police Department, which did not provide the requested information regarding the primary response station and response time. It was assumed that the primary response station would be the Harbor Community Police Station located at 2175 John S. Gibson Boulevard, approximately 3.8 and 4.8 miles from the shaft sites, respectively.

Fire Station 48 of the Los Angeles Fire Department would be the jurisdictional primary responding station for the Angels Gate and Royal Palms shaft sites. Fire Station 48 is located at 1601 South Grand Avenue in the community of San Pedro, approximately 1.7 miles from the Angels Gate shaft site and 2.7 miles from the Royal Palms shaft site. It houses a hazardous materials taskforce, which consists of a hazardous materials squad, the taskforce, and a rescue ambulance squad, and has a total of 16 members. Fire Station 101 of the Los Angeles Fire Department would respond to these sites as well. The station is located at 1414 25th Street in the community of San Pedro, approximately 1.6 miles from the Angels Gate shaft site and 0.6 miles from the Royal Palms shaft site. It is equipped with a single four-person engine company and two-person rescue ambulance. The estimated response time for service to these shaft sites would be approximately 4 to 6 minutes. (Herrera pers. comm. 2010c; Fry pers. comm.; LAFD 2010a.)

Fire Stations 36, 85, and 112 of the Los Angeles Fire Department would be secondary responding stations. Fire Station 36 is located at 1005 North Gaffey Street in the community of San Pedro, approximately 3.2 miles from the Angels Gate shaft site and 4.9 miles from the Royal Palms shaft site. It is equipped with a single four-person engine company. Fire Station 85 is located at 1331 West 253rd Street in Harbor City, approximately 7.4 miles from the Angels Gate shaft site and 9.2 miles from the Royal Palms shaft site. It consists of an urban search and rescue vehicle, a truck, two engines, and a rescue ambulance, and has a total of 12 members. Fire Station 112 is located at 444 South Harbor Boulevard, Berth 86 in the Port of Los Angeles, approximately 3.2 miles from the Angels Gate shaft site and 4.6 miles from the Royal Palms shaft site. It is equipped with a single four-person engine company. The estimated response time for service to these shaft sites would be approximately 4 to 6 minutes. (Herrera pers. comm. 2010c; Fry pers. comm.; LAFD 2010a.)

16.2.3.3 Riser/Diffuser Area

Maritime safety, law enforcement, and emergency response would be provided by the USCG for the riser and diffuser area on the San Pedro Shelf (SP Shelf) and the Palos Verdes Shelf (PV Shelf), and for the existing ocean outfalls.

16.3 Regulatory Setting

16.3.1 Federal

16.3.1.1 Maritime Transportation Security Act

The Maritime Transportation Security Act (MTSA) and its international equivalent, the International Ship and Port Facility Security Code (adopted by the International Maritime Organization), require port authorities and facility operators to designate and train company, vessel, and facility security officers and

develop security plans for facilities and vessels based on security assessments and surveys. MTSA regulations also guide implementation of security measures specific to the operations of each facility and compliance with maritime security levels. Regulations regarding the submittal of security plans became effective December 31, 2003; operational compliance was mandated by July 1, 2004.

16.3.1.2 Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) has prepared a number of guidance documents, including the underground construction regulations found in 29 Code of Federal Regulations (CFR) Part 1926, Section 800. The underground construction regulation applies to the construction of underground tunnels, shafts, chambers, and passageways. Hazards include reduced natural ventilation and light, difficult and limited access and egress, exposure to air contaminants, fire, flooding, and explosion. A sample of items covered by the OSHA standards includes requirements for safe access and egress routes, employee training in hazard recognition, a “check-in/check-out” procedure, and emergency procedures. All employees involved in underground construction must be trained to recognize and respond to hazards associated with tunneling work. (OSHA 2003.)

A confined space entry program is a requirement of 29 CFR Part 1910. A confined space means a space that is large enough and so configured that an employee can physically enter and perform work; has limited or restricted means for entry or exit; and is not designed for continuous employee occupancy. Implementation of a written permit space program is required when an employer decides that its employees will enter permit-required spaces.

16.3.2 State and Regional

16.3.2.1 California Occupational Safety and Health Administration

Tunnel Safety Orders

The Tunnel Safety Orders of the 8 California Code of Regulations (CCR) Subchapter 20 establishes minimum safety standards in places of employment at tunnels, shafts, raises, inclines, and underground chambers. A sample of items covered includes safety precautions, first aid, emergency plan and precautions, rescue apparatus, and fire prevention and control.

16.3.3 Local

16.3.3.1 City of Los Angeles General Plan

Fire Protection and Prevention Plan

Fire prevention, fire protection, and emergency medical services in the city of Los Angeles are operated under the Fire Protection and Prevention Plan, an element of the City of Los Angeles General Plan, and the Fire Code section of the City of Los Angeles Municipal Code. The fire protection and prevention plan serves as a guide for the construction, maintenance, and operation of fire protection facilities in the city (City of Los Angeles 1995). The plan sets forth policies and standards for fire station distribution and location, fire suppression water-flow (or fire flow), fire hydrant standards and locations, firefighting equipment access, emergency ambulance services, and fire prevention activities. The Los Angeles Fire Department also considers population, density, nature of onsite land uses, and traffic flow in evaluating the adequacy of fire protection services for a specific area or land use.

16.3.3.2 Los Angeles County General Plan

The Safety Element of the Los Angeles County General Plan serves as a long-range emergency response plan. It seeks to reduce future losses of life, injuries, and socioeconomic disruption by design of safer environments and facilities, avoidance of hazardous sites, removal or strengthening of unsafe structures, and promotion of preparedness for emergencies.

16.3.3.3 Port of Los Angeles Port Master Plan

Harbor Fire Protection Master Plan

The Harbor Fire Protection Master Plan is a joint program to develop goals and objectives for a fire protection plan for the harbor area, which encompasses not only the harbor district, but also the surrounding communities of San Pedro and Wilmington. Due to security sensitive information, the Harbor Fire Protection Master Plan is not available to the public.

16.3.3.4 Long Beach General Plan

Hazardous fire conditions are controlled via the permit issuance program and the business licenses approval required by the Long Beach Fire Prevention Bureau. Special permits are required for most hazardous materials and processes, and all business license applications must be filed annually and approved by the fire prevention bureau.

The city of Long Beach and its facilities are fairly well protected by city codes and standards. The city has adopted the 1971 edition of the Uniform Fire Code with additions. A 1970 edition of the Uniform Building Code has been adopted by the city with a number of amendments and additions. According to the insurance services office standards, the building code provisions are comprehensive, but are somewhat inadequate in areas pertaining to allowable areas, thickness of walls, and fire-resistance construction.

16.3.3.5 Emergency Response and Evacuation Plans

City of Los Angeles

The city of Los Angeles and its various public service providers and departments are responsible for managing any emergency related to city and Port of Los Angeles operations, including the communities of San Pedro and Wilmington, depending on the severity of the emergency. The City of Los Angeles Emergency Management Department (EMD) coordinates the emergency preparedness and planning of all city departments, over 4 million residents, and over 400,000 businesses residing within the city's 475 square miles. During major emergencies and disasters, the EMD coordinates the response, mitigation, and recovery efforts (City of Los Angeles EMD 2010). The EMD has prepared the City of Los Angeles Emergency Operations Master Plan and Procedures that describes the organization, responsibilities, and priorities of all city departments and local agencies in case of an emergency (City of Los Angeles EMD 2006). The manual is maintained by the EMD and is organized by type of emergency as well as by the city departments that are responsible for responding to certain emergencies. The manual includes the following sections applicable to the Port of Los Angeles and other city locations:

- Los Angeles Harbor Department (LAHD) Plan
- Hazardous Materials Annex
- Tsunami Response Plan Annex
- Major Fire Annex

These documents contain information regarding the chain of command and the general organization of any response to a major emergency event. They also include an emergency checklist for the Los Angeles Fire Department and other departments, such as the LAHD, and identify the respective division that is responsible for carrying out the action items. (City of Los Angeles EMD 1993.) Specifically, the LAHD Plan of the City of Los Angeles Emergency Operations Organization Manual identifies very general initial policies and procedures for the LAHD in the event of any emergency.

The hazardous materials annex contains information regarding the chain of command and the general organization of any response to a hazardous material release anywhere in the city, including the Port of Los Angeles area (City of Los Angeles EMD 1993). It includes an emergency checklist for the LAHD to follow should a hazardous materials release occur within the port area. The checklist identifies specific pre-event, response, and recovery action items and identifies the respective LAHD divisions (i.e., Port Police) that are responsible for carrying out the action items.

The tsunami response plan annex identifies the Port of Los Angeles area as a tsunami inundation zone and outlines policies and procedures of nine different city departments (including the LAHD, the Los Angeles Police Department, the Los Angeles Fire Department, and the EMD) in event of a tsunami (City of Los Angeles EMD 2008). The plan identifies evacuation routes for the San Pedro and harbor areas and specifies evacuation locations. According to the plan, the mission of the LAHD with respect to a tsunami is to provide employees, tenants, and the public with a safe, well-planned, and organized method of evacuating the Port of Los Angeles area. The plan outlines several actions for which the Los Angeles Port Police are responsible, including following the established evacuation checklist, evacuating the affected tsunami inundation zone, and activating notification procedures. The divisional organization and basic functions that would support the tsunami response plan for the port area are consistent with the emergency plan and procedures of the LAHD.

County of Los Angeles

The Office of Emergency Management (OEM) was established by Chapter 2.68 of the Los Angeles County Code with responsibility for organizing and directing the preparedness efforts of the emergency management organization of the county. The OEM is the day-to-day Los Angeles County operational area coordinator for the entire geographic area of the county, and its responsibilities include:

- Maintaining an approved operational area emergency response plan
- Providing ongoing leadership and coordinating disaster plans and exercises with the 88 cities, 137 unincorporated communities, and 288 special districts in the county
- Maintaining the Los Angeles County Emergency Operations Center in a state of operational readiness, in partnership with the Los Angeles County Sheriff's Department Emergency Operations Bureau
- Serving as an on-call county emergency operations center first responder on a 24-hour basis
- Providing an OEM duty officer on a 24-hour basis to address inquiries and concerns from county, local, and state officials regarding potential or escalating emergency conditions (County of Los Angeles OEM 2010)

The Los Angeles County Operational Area Emergency Response Plan (County of Los Angeles 1998) outlines the planned response of the county operational area to emergencies associated with natural and man-made disasters and technological incidents. Cities and unincorporated areas in the Los Angeles County Operational Area include Pomona, Carson, Cerritos, Whittier, and Long Beach (County of Los Angeles OEM 2009).

Port of Los Angeles

The LAHD maintains emergency response and evacuation plans. The Homeland Security Division of the LAHD is responsible for maintaining and implementing the LAHD's Emergency Procedures Plan. This plan was last revised in January 2010. The LAHD's Emergency Procedures Plan references its evacuation plan. The evacuation plan is maintained and implemented by the Los Angeles Port Police and in consultation with the Homeland Security Division and the USCG. The LAHD's evacuation plan was also updated in January 2010. (Provinchain pers. comm. 2010b.)

City of Carson

The city of Carson has prepared a multi-hazard functional plan for emergency response within the city. The plan meets the state of California's Standardized Emergency Management System (SEMS) requirements. The city also complies with the Los Angeles County Emergency Management Plan.

Threats and emergency response are thoroughly described and outlined in the SEMS Multi-Hazard Functional Plan. Key points of the plan include the identification of critical areas in the city that represent dangers, as well as communications, areas for meeting and staging in an emergency event, and emergency evacuation.

The plan also identifies emergency routes. The city has four major freeways (I-405, SR-91, I-110, and I-710) that would serve as potential evacuation routes during a disaster. Arterial streets with right-of-way widths from 80 to 100 feet form a grid pattern throughout the city at 0.5-mile intervals. East-west arterial streets that would be used as evacuation routes include Lomita Boulevard, Sepulveda Boulevard, 223rd Street, Carson Street, Del Amo Boulevard, Victoria Street, Artesia Boulevard, and Alondra Boulevard. North-south arterial streets include Santa Fe Avenue, Alameda Street, Wilmington Avenue, Avalon Boulevard, Main Street, Figueroa Street, and Broadway.

City of Cerritos

The city of Cerritos has prepared a multi-hazard functional plan for emergency response within the city. The plan meets the state of California's SEMS requirements. The city also complies with the Los Angeles County Emergency Management Plan.

Emergency response and threats are thoroughly described and outlined in the multi-hazard functional plan. Key points of the plan include the identification of critical areas in the city that represent dangers, as well as communications, areas for meeting and staging in an emergency event, and emergency evacuation.

The plan also includes resources and information to assist city residents, public and private sector organizations, and others interested in participating in planning for natural hazards. The mitigation plan provides a list of activities that could assist the city in reducing risk and preventing loss from future natural hazard events. The action items address multi-hazard issues, as well as activities for earthquakes, flooding, and windstorms.

Goals for emergency services include:

- Establishing policy to ensure mitigation projects for critical facilities, services, and infrastructure
- Strengthening emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry
- Coordinating and integrating natural hazard mitigation activities, where appropriate, with emergency operations plans and procedures

United States Coast Guard

Most USCG emergency response and management plans are internal or contain sensitive security information (Hennigan pers. comm. 2010a); therefore, none were available for analysis.

16.4 Environmental Impacts and Mitigation Measures

16.4.1 Methodology and Assumptions

The program and project elements were evaluated to determine if they would interfere or conflict with the implementation of any emergency response plans, emergency preparedness plans, or evacuation plans. Public services for the program and project elements were assessed regarding their ability to handle potential physical environmental effects caused by construction activities that could interfere with the implementation of emergency response plans, emergency preparedness plans, and evacuation plans.

All public service agencies were contacted to obtain information regarding their existing and projected service capacity, as well as projected impacts that would result from implementation of the program and project elements. Responses were received from all agencies with the exception of the Los Angeles Police Department. In the absence of a response, Los Angeles Police Department services were considered in all analyses and determinations for project and program elements under the jurisdiction of the Los Angeles Police Department. A summary of which providers were contacted, when they were contacted, and when they responded is shown in Table 16-5. For more information regarding their responses, please see the provider responses in Appendix 16-A.

Table 16-5. Public Service Providers

Provider	Contact Date	Response Date
ABC Unified School District	February 17, 2010	March 9, 2010
Los Angeles County Fire Department	February 18, 2010	March 5, 2010
Los Angeles County Sheriff's Department	February 17, 2010	March 12, 2010
Los Angeles Port Police	February 18, 2010	March 8, 2010
Los Angeles Unified School District	February 17, 2010	August 19, 2010
Long Beach Unified School District	February 17, 2010	March 16, 2010
Long Beach Fire Department	February 18, 2010	March 10, 2010
Long Beach Police Department	February 17, 2010	March 11, 2010
Los Angeles Fire Department	February 18, 2010	March 26, 2010
Los Angeles Police Department	February 17, 2010	No response
Pomona Police Department	February 17, 2010	March 4, 2010
Pomona Unified School District	February 17, 2010	March 4, 2010
United States Coast Guard	February 18, 2010	March 5, 2010
Whittier City School District	February 17, 2010	March 10, 2010

16.4.1.1 Baseline

CEQA Baseline

The California Environmental Quality Act (CEQA) baseline is the existing public services that would be provided at the locations where program and project elements would be constructed and operated.

NEPA No-Federal-Action Baseline

The National Environmental Policy Act (NEPA) no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the condition of resources at the year 2022 when construction of project elements under the United States (U.S.) Army Corps of Engineers' (Corps') jurisdiction would conclude.

Existing coverage and level of public services are expected to remain in a comparable state through the completion of construction in 2022. As a result, the NEPA no-federal-action baseline is the same as the CEQA baseline.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

16.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for public services (PS):

PS-1. Requires the substantial expansion of existing fire protection facilities or the construction of new fire protection facilities to maintain an acceptable level of service.

PS-2. Requires the substantial expansion of existing police service facilities or the construction of new police service facilities to maintain an acceptable level of service.

PS-3. Requires the substantial expansion of existing school facilities or requires the building of new facilities.

PS-4. Requires the substantial expansion of existing parks and/or recreation opportunities or requires the building of new recreation facilities.

PS-5. Impairs implementation of or physically interferes with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or requires the preparation of a new emergency response or preparedness plan.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on public services before mitigation. Table 16-6 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 16-6 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 16-6. Thresholds Evaluated

		Threshold				
	Alt.	PS-1	PS-2	PS-3	PS-4	PS-5
Program Element						
SJCWRP Plant Expansion	1–5					X
SJCWRP Process Optimization	1–4					X
POWRP Process Optimization	1–4					X
LCWRP Process Optimization	1–4					X
LBWRP Process Optimization	1–4					X
JWPCP Solids Processing	1–5					X
Project Element						
Wilmington to SP Shelf (onshore tunnel)[a]	1,2					X
Wilmington to SP Shelf (offshore tunnel)	1					X
Wilmington to PV Shelf (onshore tunnel)[a]	1,2					X
Wilmington to PV Shelf (offshore tunnel)	2					X
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3					X
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3					X
Figueroa/Western to Royal Palms (onshore tunnel)	4					X
JWPCP East Shaft Site	1,2					X
TraPac Shaft Site	1,2					X
LAXT Shaft Site	1,2					X
Southwest Marine Shaft Site	1,2					X
JWPCP West Shaft Site	3,4					X
Angels Gate Shaft Site	3					X
Royal Palms Shaft Site	4					X
SP Shelf Riser/Diffuser Area	1					X
PV Shelf Riser/Diffuser Area	2,3					X
Existing Ocean Outfalls Riser/Diffuser Area	1–4					X

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
Alt. = alternative

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears.

16.4.3 Alternative 1

16.4.3.1 Program

Impact PS-5. Would Alternative 1 (Program) impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan?

San Jose Creek Water Reclamation Plant – Plant Expansion and Process Optimization

Construction

Emergency response and evacuation planning is the responsibility of the OEM, the Los Angeles County Fire Department, and the Los Angeles County Sheriff's Department. The SJCWRP plant expansion and process optimization construction activities would be subject to emergency response and evacuation plans implemented by the Los Angeles County Fire Department and the Los Angeles County Sheriff's Department. These plans include, but are not limited to, the general plan for Los Angeles County and the Los Angeles County Operational Area Emergency Response Plan.

Construction at the SJCWRP would not result in additional permanent employees or changes in access to the plant. Construction workers would be required for the duration of construction (approximately 2 to 3 years). All construction would be done within the existing SJCWRP site. Construction activities would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation Districts' contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction at the SJCWRP would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Todd pers. comm.; Tse pers. comm.). Impacts would be less than significant.

Pomona Water Reclamation Plant – Process Optimization

Construction

Emergency response and evacuation planning is the responsibility of the OEM, the Los Angeles County Fire Department, and the Pomona Police Department. The POWRP process optimization construction activities would be subject to emergency response and evacuation systems implemented by the Los Angeles County Fire Department and Pomona Police Department. These plans include, but are not limited to, the Los Angeles County General Plan and the Los Angeles County Operational Area Emergency Response Plan.

Construction at the POWRP would not result in additional permanent employees or changes in access to the plant. Furthermore, all construction would be done within the existing POWRP site. Therefore, construction at the POWRP would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Todd pers. comm.; Wright pers. comm.). Impacts would be less than significant.

Los Coyotes Water Reclamation Plant – Process Optimization

Construction

Emergency response and evacuation planning is the responsibility of the OEM, the Los Angeles County Fire Department, and the Los Angeles County Sheriff's Department. The LCWRP process optimization construction activities would be subject to emergency response and evacuation systems implemented by the Los Angeles County Fire Department and the Los Angeles County Sheriff's Department. These plans include, but are not limited to, the Los Angeles County General Plan, the City of Cerritos Multi-Hazard Functional Plan, and the Los Angeles County Operational Area Emergency Response Plan.

Construction at the LCWRP would not result in additional permanent employees or changes in access to the plant. Furthermore, all construction would be done within the existing LCWRP site. Therefore, construction at the LCWRP would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Todd pers. comm.; Tse pers. comm.). Impacts would be less than significant.

Long Beach Water Reclamation Plant – Process Optimization

Construction

Emergency response and evacuation planning is the responsibility of the OEM, the Long Beach Fire Department, and the Long Beach Police Department. The LBWRP process optimization construction activities would be subject to emergency response and evacuation systems implemented by the Long Beach Fire Department and the Long Beach Police Department. These plans include, but are not limited to, the Long Beach General Plan and the Los Angeles County Operational Area Emergency Response Plan.

Construction at the LBWRP would not result in additional permanent employees or changes in access to the plant. Furthermore, all construction would be done within the existing LBWRP site. Therefore, construction at the LBWRP would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Portolan pers. comm.; Levy pers. comm.). Impacts would be less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

Emergency response and evacuation planning is the responsibility of the OEM, the Los Angeles County Fire Department, and the Los Angeles County Sheriff's Department. The JWPCP solids processing construction activities would be subject to emergency response and evacuation plans implemented by the Los Angeles County Fire Department and the Los Angeles County Sheriff's Department. These plans include, but are not limited to, the Los Angeles County General Plan, the City of Carson Multi-Hazard Functional Plan, and the Los Angeles County Operational Area Emergency Response Plan.

Construction at the JWPCP would not result in additional permanent employees or changes in access to the plant. Furthermore, all construction would be done within the existing JWPCP site. Construction activities would comply with all laws and regulations to maintain emergency vehicular access and ensure

continuous law enforcement access to surrounding areas. Furthermore, the Sanitation Districts' contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction at the JWPCP would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Todd pers. comm.; Tse pers. comm.; De Cew pers. comm.). Impacts would be less than significant.

CEQA Impact Determination

Construction of Alternative 1 (Program) would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

16.4.3.2 Project

Impact PS-5. Would Alternative 1 (Project) impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the OEM, the EMD, the Los Angeles County Fire Department, the Los Angeles County Sheriff's Department, the Los Angeles Fire Department, and the Los Angeles Port Police. The Wilmington to SP Shelf onshore tunnel construction activities would be subject to emergency response and evacuation systems implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20, of the CCR, Tunnel Safety Orders; the City of Los Angeles Emergency Operations Master Plan and Procedures; the Harbor Fire Protection Master Plan; the Los Angeles County General Plan; the Los Angeles County Operational Area Emergency Response Plan; and the LAHD Emergency Procedures Plan.

All construction crews would be specifically trained to work within tunnels and would have standard operating procedures in case of a tunneling construction-related emergency. The Sanitation Districts' contractor would prepare and comply with the Confined Space Entry Program, as required by Title 29 of the CFR, addressing all potential physical and environmental hazards and containing procedures for safe entry into confined spaces, including, but not limited to, the following:

- Training of personnel
- Controlled access to the space

- Ventilation of the space
- Personal protective equipment
- Rescue plan provision

Contractors would also be required to operate and maintain their own safety equipment, including, but not limited to:

- Life lines
- Harnesses
- Respiratory protective equipment
- Personal protective equipment
- Shoring
- Barricades

Tunneling operations would comply with strict state and federal OSHA requirements, as discussed in Title 29 of the CFR and Title 8 of the CCR. The contractor would prepare emergency and evacuation plans that all construction workers would follow. The emergency plan would outline duties and responsibilities of all construction personnel during an emergency. The plan would include ventilation controls, firefighting equipment, rescue procedures, evacuation plans, and communications.

Tunnel construction would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation District's contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction of the onshore portion of the Wilmington to SP Shelf tunnel would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Todd pers. comm.; Herrera pers. comm. 2010a; Provinchain pers. comm. 2010a; Tse pers. comm.; De Cew pers. comm.). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the EMD, the Los Angeles Fire Department, the Los Angeles Port Police, and the USCG. The Wilmington to SP Shelf offshore tunnel construction activities would be subject to emergency response and evacuation systems implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20, of the CCR, Tunnel Safety Orders; the LAHD Emergency Procedures Plan; the City of Los Angeles Emergency Operations Master Plan and Procedures; and the Harbor Fire Protection Master Plan.

The analysis for construction of the offshore tunnel is the same as for construction of the onshore tunnel. The construction of the offshore tunnel would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation Districts' contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction of the offshore portion of the Wilmington to SP Shelf tunnel would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Provinchain pers. comm. 2010a; Herrera pers. comm. 2010a; Hennigan pers. comm. 2010b). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Site – JWPCP East

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the OEM, the Los Angeles County Fire Department, and the Los Angeles County Sheriff's Department. The JWPCP East shaft site construction activities would be subject to emergency response and evacuation plans implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20, of the CCR, Tunnel Safety Orders; the Los Angeles County General Plan; and the Los Angeles County Operational Area Emergency Response Plan.

The analysis for construction of the JWPCP East shaft site is the same as for construction of the onshore portion of the Wilmington to SP Shelf tunnel. The construction of the JWPCP East shaft site would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation District's contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction at the JWPCP East shaft site would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Todd pers. comm.; Tse pers. comm.; De Cew pers. comm.). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the OEM, the EMD, the Los Angeles Fire Department, and the Los Angeles Port Police. The TraPac, LAXT, and Southwest Marine shaft site construction activities would be subject to emergency response and evacuation plans implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20, of the CCR, Tunnel Safety Orders; the LAHD Emergency Procedures Plan; the City of Los Angeles Emergency Operations Master Plan and Procedures; the Harbor Fire Protection Master Plan; and the Los Angeles County Operational Area Emergency Response Plan.

The analysis for construction of the TraPac, LAXT, and Southwest Marine shaft sites is the same as for construction of the onshore portion of the Wilmington to SP Shelf tunnel. The construction of the shaft site would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation District's contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction at the TraPac, LAXT, and Southwest Marine shaft sites would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Herrera pers. comm. 2010a; Provinchain pers. comm. 2010a). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

The riser would be pre-fabricated on land prior to ocean construction. The parts and materials for the riser preassembly would be brought to the Port of Los Angeles via truck from the greater Los Angeles region. The Pasha Terminal is the assumed location for preassembly of the riser. For preassembly, approximately 10 to 15 construction workers would be on site for a 10-hour shift per day, 5 days per week, for about 8 to 10 months. The riser and diffuser construction activities and the corresponding marine vessels required for the work are summarized in Table 3-10. All of the work, including mobilization, preassembly, site preparation, construction, and demobilization, would take approximately 24 months for the riser and approximately 6 to 12 months for the diffuser.

Maritime safety, law enforcement, and emergency response are provided by the USCG. Construction on the SP Shelf would comply with all laws and regulations to maintain a safe work environment and ensure safe operating practices. Furthermore, the Sanitation District's contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction on the SP Shelf would not substantially impair implementation of or physically

interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Hennigan pers. comm. 2010b). Impacts would be less than significant. For a discussion and analysis of maritime transportation and safety, see Chapter 19.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Improvements to the existing ocean outfalls include joint repairs and re-ballasting. The re-ballasting work would occur on the existing 72-, 90-, and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. The marine vessels required for this work are listed in Table 3-10. The majority of the construction work would be based on one 10-hour shift per day, 5 days per week. It is estimated that approximately eight to ten construction workers would be needed for the rehabilitation work. All of the work, including mobilization, construction, and demobilization, would take approximately 9 months.

Maritime safety, law enforcement, and emergency response are provided by the USCG. Construction on the existing ocean outfalls would comply with all laws and regulations to establish a safe work environment and ensure safe operating practices. Furthermore, the Sanitation District's contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, rehabilitation of the existing ocean outfalls would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Hennigan pers. comm. 2010b). Impacts would be less than significant. For a discussion and analysis of marine transportation and safety, see Chapter 19.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 1 (Project) would not impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

16.4.3.3 Impact Summary – Alternative 1

Impacts on public services analyzed in this EIR/EIS for Alternative 1 are summarized in Table 16-7 and Table 16-8. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 16-7. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact PS-5. Would Alternative 1 (Program) impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan?			
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 16-8. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact PS-5. Would Alternative 1 (Project) impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 16-8 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

16.4.4 Alternative 2

16.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

16.4.4.2 Project

The impacts for the onshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact PS-5. Would Alternative 2 (Project) impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the EMD, Los Angeles Fire Department, Los Angeles Port Police, and the USCG. The Wilmington to PV Shelf offshore tunnel construction activities would be subject to emergency response and evacuation plans implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20 of the CCR, Tunnel Safety Orders; the LAHD Emergency Procedures Plan; the City of Los Angeles Emergency Operations Master Plan and Procedures; and the Harbor Fire Protection Master Plan.

The analysis for construction of the Wilmington to PV Shelf offshore tunnel is the same as described in Section 16.4.3.2 for construction of the Wilmington to SP Shelf offshore tunnel. Therefore, construction

of the offshore portion of the Wilmington to PV Shelf tunnel would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Provinchain pers. comm. 2010a; Herrera pers. comm. 2010a; Hennigan pers. comm. 2010b). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

The analysis for construction of the riser and diffuser on the PV Shelf is the same as for construction of the riser and diffuser on the SP Shelf described in Section 16.4.3.2 for Alternative 1.

Construction of the riser and diffuser on the PV Shelf would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Hennigan pers. comm. 2010b). Impacts would be less than significant. For a discussion and analysis of marine transportation and safety, see Chapter 19.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 2 (Project) would not impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 2 (Project) would not impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

16.4.4.3 Impact Summary – Alternative 2

Impacts on public services for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 16-7. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 16-9. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 16-9. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact PS-5. Would Alternative 2 (Project) impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 16-9 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

16.4.5 Alternative 3

16.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

16.4.5.2 Project

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as for Alternative 2 (Project). The impacts for the existing ocean outfalls would be the same as for Alternative 1 (Project).

Impact PS-5. Would Alternative 3 (Project) impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the OEM, the EMD, the Los Angeles County Fire Department, the Los Angeles Fire Department, the Los Angeles County Sheriff's Department, and the Los Angeles Police Department. The Figueroa/Gaffey to PV Shelf onshore tunnel construction activities would be subject to emergency response and evacuation plans implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20, of the CCR, Tunnel Safety Orders; the Fire Protection and Prevention Plan Element of the City of Los Angeles General Plan; the City of Los Angeles Emergency Operations Master Plan and Procedures; the Los Angeles County General Plan; and the Los Angeles County Operational Area Emergency Response Plan.

All construction crews would be specifically trained to work within tunnels and would have standard operating procedures in case of a tunneling-construction related emergency. The Sanitation Districts' contractor would prepare and comply with the Confined Space Entry Program, as required by Title 29 of the CFR, addressing all potential physical and environmental hazards and containing procedures for safe entry into confined spaces, including, but not limited to, the following:

- Training of personnel
- Controlled access to the space
- Ventilation of the space
- Personal protective equipment
- Rescue plan provision

Contractors would also be required to operate and maintain their own safety equipment, including, but not limited to:

- Life lines
- Harnesses
- Respiratory protective equipment
- Personal protective equipment
- Shoring
- Barricades

Tunneling operations must comply with strict state and federal OSHA requirements, as discussed in Title 29 of the CFR and Title 8 of the CCR. The contractor would prepare emergency and evacuation plans that all construction workers would follow. The emergency plan would outline duties and responsibilities of all construction personnel during an emergency. The plan would include ventilation controls, firefighting equipment, rescue procedures, evacuation plans, and communications. Tunnel

construction would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation District's contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction of the onshore portion of the Wilmington to SP Shelf tunnel would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Todd pers. comm.; Tse pers. comm.; De Cew pers. comm.; Herrera 2010c). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the OEM, the EMD, the Los Angeles Fire Department, the Los Angeles Police Department, and the USCG. The Figueroa/Gaffey to PV Shelf offshore tunnel construction activities would be subject to emergency response and evacuation plans implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20, of the CCR, Tunnel Safety Orders; the Fire Protection and Prevention Plan Element of the City of Los Angeles General Plan; the City of Los Angeles Emergency Operations Master Plan and Procedures; and the Los Angeles County Operational Area Emergency Response Plan.

The analysis for construction of the offshore tunnel is the same as for construction of the onshore tunnel. The construction of the offshore tunnel would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation Districts' contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction of the offshore portion of the Figueroa/Gaffey to PV Shelf tunnel would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Hennigan pers. comm. 2010b; Herrera pers. comm. 2010c). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Site – JWPCP West

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the OEM, the EMD, the Los Angeles County Fire Department, the Los Angeles Fire Department, and the Los Angeles County Sheriff's Department. The JWPCP West shaft site construction activities would be subject to emergency response and evacuation plans implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20, of the CCR, Tunnel Safety Orders; the Los Angeles County General Plan; the Los Angeles County Operational Area Emergency Response Plan; the Fire Protection and Prevention Plan Element of the City of Los Angeles General Plan; and the City of Los Angeles Emergency Operations Master Plan and Procedures.

The analysis for construction of the JWPCP West shaft site is the same as for construction of the onshore portion of the Figueroa/Gaffey to PV Shelf tunnel. The construction of the shaft site would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation Districts' contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction at the JWPCP West shaft site would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Todd pers. comm.; Tse pers. comm.; De Cew pers. comm.; Herrera pers. comm. 2010c). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the OEM, the EMD, the Los Angeles Fire Department, and the Los Angeles Police Department. The Angels Gate shaft site construction activities would be subject to emergency response and evacuation plans implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20, of the CCR, Tunnel Safety Orders; the Los Angeles County Operational Area Emergency Response Plan; the Fire Protection and Prevention Plan Element of the City of Los Angeles General Plan; and the City of Los Angeles Emergency Operations Master Plan and Procedures.

The analysis for construction of the Angels Gate shaft site is the same as for construction of the onshore portion of the Figueroa/Gaffey to PV Shelf tunnel. The construction of the shaft site would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation Districts' contractor would adhere to all

emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction at the Angels Gate shaft site would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Herrera pers. comm. 2010c). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (See Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

16.4.5.3 Impact Summary – Alternative 3

Impacts on public services for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 16-7. Impacts analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 16-10. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 16-10. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact PS-5. Would Alternative 3 (Project) impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

16.4.6 Alternative 4 (Recommended Alternative)

16.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

16.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except construction would occur over a period of 4 years instead of 5 years. The construction impacts for the rehabilitation of the existing ocean outfalls for Alternative 4 (Project) would be the same as for Alternative 1 (Project).

Impact PS-5. Would Alternative 4 (Project) impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the OEM, the EMD, the Los Angeles County Fire Department, the Los Angeles Fire Department, the Los Angeles County Sheriff's Department, and the Los Angeles Police Department. The Figueroa/Western to Royal Palms onshore tunnel construction activities would be subject to emergency response and evacuation plans implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20, of the CCR, Tunnel Safety Orders; the Fire Protection and Prevention Plan Element of the City of Los Angeles General Plan; the City of Los Angeles Emergency Operations Master Plan and Procedures; the Los Angeles County General Plan; and the Los Angeles County Operational Area Emergency Response Plan.

All construction crews would be specifically trained to work within tunnels and would have standard operating procedures in case of a tunneling construction-related emergency. The Sanitation Districts' contractor would prepare and comply with a Confined Space Entry Program, as required by Title 29 of the CFR, addressing all potential physical and environmental hazards and containing procedures for safe entry into confined spaces, including, but not limited to, the following:

- Training of personnel
- Controlled access to the space
- Ventilation of the space
- Personal protective equipment
- Rescue plan provision

Contractors would also be required to operate and maintain their own safety equipment, including, but not limited to:

- Life lines
- Harnesses
- Respiratory protective equipment
- Personal protective equipment
- Shoring
- Barricades

Tunneling operations must comply with strict state and federal OSHA requirements, as discussed in Title 29 of the CFR and Title 8 of the CCR. The contractor would prepare emergency and evacuation plans that all construction workers would be trained on and comply with. The emergency plan would outline duties and responsibilities of all construction personnel during an emergency. The plan would include ventilation controls, firefighting equipment, rescue procedures, evacuation plans, and communications.

Tunnel construction would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation District's contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction of the onshore portion of the Figueroa/Western to Royal Palms tunnel would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Todd pers. comm.; Tse pers. comm.; De Cew pers. comm.; Herrera pers. comm. 2010c). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Royal Palms

Construction

CEQA Analysis

Emergency response and evacuation planning is the responsibility of the OEM, the EMD, the Los Angeles Fire Department, and the Los Angeles Police Department. The Royal Palms shaft site construction activities would be subject to emergency response and evacuation plans implemented by these agencies. These plans include, but are not limited to: Part 1926, Section 800, of Title 29 of the CFR; Part 1910 of Title 29 of the CFR, the Confined Space Entry Program; Title 8, Subchapter 20, of the CCR, Tunnel Safety Orders; the Los Angeles County Operational Area Emergency Response Plan; the Fire Protection and Prevention Plan Element of the City of Los Angeles General Plan; and the City of Los Angeles Emergency Operations Master Plan and Procedures.

The analysis for construction of the Royal Palms shaft site is the same as for construction of the Figueroa/Western to Royal Palms onshore tunnel. The construction of the Royal Palms shaft site would comply with all laws and regulations to maintain emergency vehicular access and ensure continuous law enforcement access to surrounding areas. Furthermore, the Sanitation District's contractor would adhere

to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans. Therefore, construction at the Royal Palms shaft site would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Herrera pers. comm. 2010c). Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

16.4.6.3 Impact Summary – Alternative 4

Impacts on public services for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 16-7. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 16-11. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 16-11. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact PS-5. Would Alternative 4 (Project) impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

16.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an environmental impact report (EIR) must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the water reclamation plants, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

16.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the SJCWRP, WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994).

Emergency response and evacuation planning is the responsibility of the OEM, the Los Angeles County Fire Department, and the Los Angeles County Sheriff's Department. Alternative 5 construction activities would be subject to emergency response and evacuation plans implemented by the Los Angeles County Fire Department and the Los Angeles County Sheriff's Department.

Construction of Alternative 5 (Program) would not result in additional permanent employees or changes in access to the plants. Furthermore, all construction would be done within the footprints of the existing SJCWRP and JWPCP. Therefore, construction at the SJCWRP and the JWPCP would not substantially impair implementation of or physically interfere with an existing emergency response or emergency preparedness plan or emergency evacuation plan, or require the preparation of a new emergency response or preparedness plan (Todd pers. comm.; Tse pers. comm.; De Cew pers. comm.).

16.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. Because construction would not take place under Alternative 5 (Project), there would be no constraints on any existing emergency response or emergency preparedness plan or emergency evacuation plan due to project elements. Police and fire services would operate and expand as needed to appropriately serve the JOS service area. Furthermore, emergency discharges could result in impacts related to flooding in public areas but would not result in significant impacts on existing emergency response, preparedness, and evacuation plans already in place that serve to evacuate people from areas experiencing flooding or other natural and human-caused disasters. Therefore, Alternative 5 (Project) would result in no impacts with regard to the implementation of existing emergency response, preparedness, and evacuation plans.

16.4.7.3 Impact Summary – Alternative 5

Impacts on public services for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 16-7, excluding process optimization. There would be no impacts on public services for Alternative 5 (Project).

16.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the

rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.6 and 16.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

16.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

16.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

16.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Impacts for Alternative 6 would be the same as discussed under Alternative 5 (Project); therefore, there would be no impacts on public services for Alternative 6.

16.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

Impacts on public services for all alternatives would be less than significant. No mitigation is required. Therefore, a table summarizing significant impacts and mitigation is not included in this chapter.

Chapter 17
RECREATION

17.1 Introduction

This chapter describes the existing conditions and regulations applicable to recreational resources, discusses impacts on recreational resources that would result from the various program and project elements, determines the significance of impacts, and provides mitigation measures that would reduce these impacts, where feasible. Marine recreation and impacts associated with the offshore tunnel alignments and riser and diffuser areas are discussed in Chapter 13.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the recreational resources impact analysis for each program element is summarized by alternative in Table 17-1.

Table 17-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	-
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	-
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	-
WRP Effluent Management	X	X	X	X	X	N/A	O	-
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 17-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	-
Biosolids Management	X	X	X	X	X	N/A	O	-
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 17-2.	

[a] See Section 17.4.7 for a discussion of the No-Project Alternative.
[b] See Section 17.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the recreational resources impact analysis for each project element is summarized by alternative in Table 17-2.

Table 17-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	-
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	-
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	-
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	-
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	-
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	-
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	C,O	-
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	-
JWPCP West			X	X	N/A	N/A	C,O	C
TraPac	X	X			N/A	N/A	C,O	-
LAXT	X	X			N/A	N/A	C,O	-
Southwest Marine	X	X			N/A	N/A	C,O	-
Angels Gate			X		N/A	N/A	C,O	C
Royal Palms				X	N/A	N/A	C,O	C
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	C,O	See Chapter 13.
PV Shelf		X	X		N/A	N/A	C,O	See Chapter 13.

Table 17-2 (Continued)

Project Element	Alternative 1	2	3	4	5[a]	6[b]	Analysis Location PSA	EIR/EIS
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	See Chapter 13.

[a] See Section 17.4.7 for a discussion of the No-Project Alternative.
[b] See Section 17.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

17.2 Environmental Setting

17.2.1 Regional Setting

The Los Angeles region is an urbanized area framed by open space. The Pacific Ocean, San Gabriel Mountains, Santa Susana Mountains, Baldwin Hills, and the Santa Monica Mountains are examples of natural open space resources that bound the region. Within these open space areas, a wide variety of active recreational activities, such as bird watching, horseback riding, and recreational boating, and passive recreational experiences are available. A brief description of the relevant jurisdictions and the recreational services provided within those jurisdictions are discussed in the following sections.

17.2.1.1 County of Los Angeles

The county of Los Angeles owns and operates nearly 150 local and regional parks. Other recreational facilities within the county include community and senior centers, sports fields, skate parks, and beaches. One project element analyzed in this chapter would be located within the county of Los Angeles. The Royal Palms shaft site would be located primarily within an existing easement maintained by the Sanitation Districts of Los Angeles County (Sanitation Districts) at Royal Palms Beach, as further described in Section 17.2.3.1.

17.2.1.2 City of Cerritos

The City of Cerritos Parks and Trees Division maintains 21 public parks totaling 187.2 acres of open space, including the Iron-Wood Nine Golf Course (City of Cerritos 2004). Other recreational facilities within the city include community centers, sports facilities, school playfields, swimming facilities, fitness centers, and a senior center. The city also provides regular maintenance of two parks that are not within the city limits: Bettencourt Park and Rainbow Park. Also, within the city of Cerritos, the Recreation Services Division provides recreational and educational activities including excursions; sports and fitness programs; sports leagues; golf; aquatics; and preschool, youth, teen, and adult classes (City of Cerritos 2009a). Additionally, the city provides a variety of bikeways, trail ways, and equestrian trails located along the San Gabriel River Channel and Coyote Creek flood control and drainage facilities. One program element analyzed in this chapter would be located within the city of Cerritos. Process optimization facilities would be located within the Los Coyotes Water Reclamation Plant (LCWRP), as further described in Section 17.2.2.

17.2.1.3 City of Los Angeles

The City of Los Angeles Department of Recreation and Parks maintains over 15,600 acres of parkland that is composed of 390 sites for recreational use, 9 lakes, 180 recreational centers, 59 swimming pools, children's play areas, golf courses, tennis courts, dog parks, and skate parks. The department also provides after school activities; daycare for children; teen clubs; and basketball, volleyball, softball, and flag football games and leagues. In ocean areas outside Los Angeles Harbor and at beaches located north of the harbor, there are also marine recreation opportunities (e.g., boating and waterside entertainment) (City of Los Angeles 2010a).

Ken Malloy Harbor Regional Park is a 231-acre park located near the Wilmington Drain in Wilmington and Harbor City. Facilities include, barbecue pits and picnic tables, a baseball diamond, children's play areas, a soccer field, bike and jogging paths, Harbor Pool, Machado youth campground, and Machado Lake (also known as Harbor Lake). Sport fishing is permitted at Machado Lake; however, officials recommend against eating fish (City of Los Angeles 2009a). Swimming and boating are currently not allowed in Machado Lake (City of Los Angeles 2009a).

Additionally, there are many non-park and non-open space recreational opportunities within the city. These opportunities include facilities such as museums, amusement parks, beaches, historical buildings, and other educational and visitor-oriented activities.

Two project elements analyzed in this chapter would be located within the city of Los Angeles. The Angels Gate shaft site would be located within the San Pedro Community Plan Area, and the JWPCP West shaft site would be located within the Wilmington-Harbor City Community Plan Area, as further described in Section 17.2.3.1.

17.2.2 Program Setting

Los Coyotes Water Reclamation Plant

Process optimization facilities at the LCWRP would be constructed directly adjacent to the Iron-Wood Nine Golf Course, in the city of Cerritos. The Iron-Wood Nine Golf Course, which is maintained by the city of Cerritos, includes a nine-hole golf course and lighted driving range; golf lessons and tournaments are offered here at various times of the year (City of Cerritos 2009b). In addition, the San Gabriel River is adjacent to the LCWRP property to the west, and the existing paved San Gabriel River Trail is on the eastern bank. The San Gabriel River Trail is a continuous pedestrian and bicycle path connecting Seal Beach in the south to the Whittier Narrows Recreation Area in the north. The stretch in the vicinity of the LCWRP is maintained by the Los Angeles County Department of Public Works Road Maintenance Division (Wikipedia 2010).

17.2.3 Project Setting

17.2.3.1 Shaft Site

JWPCP West

The JWPCP West shaft site would be located on the west side of Figueroa Street in the cities of Los Angeles and Carson, across from the Wilmington Athletic Complex. The Wilmington Athletic Complex, which is open to the public, is owned by the Sanitation Districts and maintained by the Wilmington Jaycee Foundation under a lease contract. It is located in the community of Wilmington in the city of Los Angeles. Facilities at the Wilmington Athletic Complex include soccer and baseball fields. The Wilmington Boys and Girls Club is located south of the Wilmington Athletic Complex opposite West

Q Street. This boys and girls club offers various educational and athletic programs to the local community at its indoor facilities.

Angels Gate

The Angels Gate shaft site would be located in a parking lot typically used for secondary parking within Angels Gate Park. The city of Los Angeles owns and operates Angels Gate Park, which is located at 3601 Gaffey Street in San Pedro. Facilities include basketball courts, a children's play area, and a soccer field. The park also hosts the Angels Gate Cultural Center, the Fort MacArthur Military Museum, and the Korean Bell of Friendship. The park is open year round, 7 days a week (City of Los Angeles 2009b).

Point Fermin Park is located at South Gaffey Street and 37th Street. It contains 37 landscaped acres of tree-shaded lawns, sheltered pergolas, colorful gardens, and a promenade along the edge of the palisade. The vantage point atop the rugged bluffs affords a breathtaking view of the coast toward Santa Catalina Island. Facilities include picnic areas, a playground, and a small amphitheater. Two trails west of the area lead to the beach and tide pools below (San Pedro.com 2010a).

Lookout Point Park is located at South Gaffey Street and 36th Street. This park is an unstaffed pocket park, which is open from 6:00 a.m. to 10:00 p.m., and has 30 parking stalls. The main feature of this park is its viewpoint. The public can look at the harbor through paid telescopes (City of Los Angeles 2010b).

Joan Milke Flores Park is located at 3601 South Gaffey Street. This park is unstaffed and open from dawn to dusk (City of Los Angeles 2010c).

Royal Palms

The Royal Palms shaft site would be located on land owned by the Sanitation Districts and Los Angeles County within Royal Palms Beach at 1799 Paseo Del Mar in the community of San Pedro in the city of Los Angeles. The beach is owned and operated by the county of Los Angeles. Facilities and activities at Royal Palms Beach include tide pools, swimming, surfing, diving, a picnic area, a promenade, restrooms, showers, a playground, and 191 parking spaces (LACDBH 2010).

The White Point Nature Preserve features 102 acres of coastal habitat on a scenic site overlooking the ocean and Catalina Island. A 0.5-mile handicapped accessible pathway circles the wildflower grasslands on the flatter areas, while trails crisscross the slopes covered with coastal sage scrub habitat. The preserve is owned by the City of Los Angeles and is managed by the Palos Verdes Peninsula Land Conservancy (PVPLC 2009).

White Point Park is located at the entrance to Royal Palms Beach near the top of the bluff along Paseo Del Mar in San Pedro. Facilities include a children's play area, restroom, and baseball field (San Pedro.com 2010b). White Point Beach lies southeast of Royal Palms Beach at the base of the bluff below White Point Park.

17.3 Regulatory Setting

17.3.1 Federal

No federal regulations are applicable to any program or project elements.

17.3.2 State

California Parklands Act of 1980

Although the law does not mandate that a general plan include a recreation element, recreation resources are included in the open space element of a general plan (Government Code Section 65560). The California Parklands Act of 1980 (Public Resources Code Section 5096.141-5096.143) identifies "the public interest for the state to acquire, develop, and restore areas for recreation…and to aid local governments of the state in acquiring, developing and restoring such areas…." The California Parklands Act also identifies the necessity of local agencies to exercise vigilance to see that the parks, recreation areas, and recreational facilities they now have are not lost to other uses. Furthermore, because the acquisition of parkland and recreation facilities is often such a challenge for local governments, the Quimby Act was enacted in 1975 to assist local governments in leveraging fees on new developments to help provide funds for this purpose.

Quimby Act of 1975

Cities and counties have been authorized since the passage of the 1975 Quimby Act (California Government Code Section 66477) to pass ordinances requiring that developers set aside land, donate conservation easements, or pay fees for park improvements. Revenues generated through the Quimby Act cannot be used for the operation and maintenance of park facilities.

The goal of the Quimby Act was to require developers to help mitigate the impacts of property improvements. The act gives authority for passage of land dedication ordinances only to cities and counties. Special districts must work with cities and/or counties to receive parkland dedication and/or in-lieu fees. The fees must be paid and land conveyed directly to the local public agencies that provide park and recreation services community-wide.

In 1982, the Quimby Act was substantially amended via Assembly Bill 1600 requiring agencies to clearly show a reasonable relationship between the public need for the recreation facility or park land and the type of development project upon which the fee is imposed. Cities can require up to 3 to 5 acres of parkland per 1,000 residents for new development based on the population count of the last census.

17.3.3 Regional

No regional regulations are applicable to any program or project elements.

17.3.4 Local

17.3.4.1 City of Cerritos General Plan

The open space and recreation element in the general plan of the city of Cerritos defines specific goals and policies relevant to recreational resources and the project, including:

Goal OSR-1. Preserve and enhance open space resources in the city to maintain and promote the high-quality of life Cerritos residents enjoy.

Policy OSR-1.3. Ensure no net loss of open space acreage occurs.

Goal OSR-2. Provide park and recreation facilities and programs for all those who live and work in the City of Cerritos.

Policy OSR-2.1. Continue to exceed the State's and the City's park guideline of three acres per 1,000 residents.

Goal OSR-5. Preserve existing open space resources.

Policy OSR-5.1. Ensure that there is no net loss of open space acreage within the City.

The city of Cerritos does not have an adopted park standard; however, the city is currently providing 3.2 acres per 1,000 residents (based on 51,488 residents as reported in the 2000 Census), which exceeds the state and city guidelines of 3 acres per 1,000 residents.

17.3.4.2 City of Los Angeles General Plan

The City of Los Angeles General Plan comprises park- and recreation-related goals, objectives, and policies that are applicable to the project. The overall goal of the open space and conservation framework element of the general plan is to achieve "…an integrated citywide/regional public and private open space system that serves and is accessible by the City's population and is unthreatened by encroachment from other land uses" (City of Los Angeles 2010d).

Elements of the project would be subject to the goals, objectives, and policies identified in the City of Los Angeles General Plan as well as the more specific community plans described in Sections 17.3.4.3 and 17.3.4.4.

17.3.4.3 San Pedro Community Plan

A portion of the project would be located within the San Pedro Community Plan Area. The San Pedro Community Plan follows the City of Los Angeles General Plan, but it also preserves recreational facilities and parks by a designation of open space zone. The community plan defines open space broadly as:

> …land which is essentially free of structures and buildings and/or is natural in character and which functions in one or more of the following ways: recreational and educational opportunities; scenic, cultural, and historic values; public health and safety; preservation and creation of community identity; rights of way for utilities and transportation facilities; preservation of natural resources or ecologically important areas; preservation of physical resources including ridge protection (City of Los Angeles 1999).

In the San Pedro Community Plan, public parks and recreational areas are managed by the City of Los Angeles Department of Recreation and Parks.

Goals and policies related to recreation and park facilities and open space in the San Pedro Community Plan would be applicable to the Angels Gate shaft site and the Royal Palms shaft site. These include the following:

Goal 4. Adequate recreation and park facilities which meet the needs of the residents in the plan area.

Objective 4-1. To conserve, maintain and better utilize existing recreation and park facilities which promote the recreational experience.

Policy 4-1.1. Preserve and improve the existing recreational facilities and park space.

Goal 5. A community with sufficient open space in balance with new development to serve the recreational, environmental, health and safety needs of the community and to protect environmental and aesthetic resources.

Objective 5-1. To preserve existing open space resources and where possible develop new open space.

Policy 5-1.1. Encourage the retention of passive and visual open space which provides a balance to the urban development of the community.

Policy 5-1.2. Protect significant environmental resources from environmental hazards.

Policy 5-1.5. The alteration of natural drainage patterns, canyons, and water courses shall be minimized except where improvements are necessary to protect life and property.

17.3.4.4 Wilmington-Harbor City Community Plan

A portion of the project would be located within the Wilmington-Harbor City Community Plan Area. The City of Los Angeles Department of Recreation and Parks manages parks and recreational areas within the Wilmington-Harbor City Community Plan, and the Wilmington-Harbor City Community Plan similarly defines parks in the same three categories as the city of Los Angeles: regional parks, community parks, and neighborhood parks.

Goals and policies related to recreation and park facilities and open space in the Wilmington-Harbor City Community Plan would be applicable to the JWPCP West shaft site. These include the following:

Goal 4. Adequate recreation and park facilities which meet the needs of the residents in the plan area.

Policy 4-1.1. Preserve and improve the existing recreational facilities and park space.

Goal 5. A community with sufficient open space in balance with new development to serve the recreational, environmental, health and safety needs of the community and to protect environmental and aesthetic resources.

Policy 5-1.1. Encourage the retention of passive and visual open space which provides a balance to the urban development of the community.

17.4 Environmental Impacts and Mitigation Measures

17.4.1 Methodology and Assumptions

For the purposes of the analysis in this chapter, the Draft Environmental Impact Statement for the Proposed Site Designation of the LA-3 Ocean Dredged Material Disposal Site off Newport Bay, Orange County, California (LA-3 DEIS), prepared for the United States (U.S.) Environmental Protection Agency and the U.S. Army Corps of Engineers (Corps), Los Angeles District (December 2004), is incorporated herein by reference. The Final Environmental Impact Statement for the Proposed Site Designation of the LA-3 Ocean Dredged Material Disposal Site off Newport Bay, Orange County, California was adopted in September 2005. The LA-3 DEIS analyzed the impacts associated with the proposed designation of the LA-3 site as a permanent site for the ocean disposal of dredged material and the continued operation of LA-2 (also known as the LA-3 DEIS Preferred Alternative [Alternative 3]). The LA-3 site is used in conjunction with the LA-2 site for the disposal of dredged material originating from projects located

within Los Angeles and Orange Counties. The relevant analysis for the LA-3 DEIS Preferred Alternative included in the LA-3 DEIS and incorporated into this chapter is associated with recreation.[1]

17.4.1.1 Baseline

CEQA Baseline

The California Environmental Quality Act (CEQA) baseline is the condition and utilization of existing recreational facilities located where program and project elements would be constructed and operated.

The program and project would not result in any net population increase and, therefore, would not result in any impact on the demand for recreation and parks. As described in Chapter 21, the program and project would not induce growth or population migration. Construction employees would be drawn from the existing local labor pool within the greater Los Angeles area. Therefore, the program and project would not result in impacts on parks and recreational facilities associated with increases in population on the surrounding communities because no increase in population would occur as a result of the program or project. As a result, net population or demand for recreational services resulting from the program and project elements was not used as part of the CEQA methodology to evaluate the impact on recreational resources.

NEPA No-Federal-Action Baseline

The National Environmental Policy Act (NEPA) no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the condition of resources at the year 2022 when construction of project elements under the Corps jurisdiction would conclude.

No reliable figures are available indicating the current number of persons utilizing recreational resources, and no reliable future projections can be made to this effect. Therefore, future population or demand for recreational services resulting from the project elements was not used as part of the NEPA methodology to evaluate the impact on recreational resources. The analysis assumes that the existing condition of recreational resources would continue to be maintained in a comparable state through the completion of construction in 2022. As a result, the NEPA no-federal-action baseline is the same as the CEQA baseline for recreational resources.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

[1] The analysis regarding recreation is included in Chapter 4 of the LA-3 DEIS on pages 4-1 to 4-5 and 4-36 to 4-38. Additionally, the cumulative analysis for recreation associated with the LA-3 Preferred Alternative is included in Chapter 4 of the LA-3 DEIS on pages 4-76 to 4-79. Finally, the relationship between short-term and long-term resource use and the irreversible or irretrievable commitment of resources on pages 4-80 to 4-81 of the LA-3 DEIS is applicable. The analysis in the LA-3 DEIS is relevant to the Clearwater Program analysis because construction of the offshore tunnel in Alternatives 1, 2, and 3 could require ocean disposal of the excavated material and would make use of either LA-3 or LA-2. The quantity of excavated material is defined in Chapter 3 of the Clearwater Program EIR/EIS and would not exceed the maximum limits of either LA-3 or LA-2. Therefore, because the LA-3 DEIS analyzed recreation impacts associated with disposing dredged materials at LA-3 and LA-2, this chapter incorporates the analysis by reference and does not provide additional information.

17.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for recreation (REC):

REC-1. Results in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources.

REC-2. Increases the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

REC-3. Includes recreational facilities or requires the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on recreational resources before mitigation. Table 17-3 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 17-3 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal-Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 17-3. Thresholds Evaluated

		Threshold		
	Alt.	**REC-1**	**REC-2**	**REC-3**
Program Element				
LCWRP Process Optimization	1–4	X		
Project Element				
JWPCP West Shaft Site	3,4	X	X	
Angels Gate Shaft Site	3	X	X	
Royal Palms Shaft Site	4	X	X	
Emergency Discharge	5,6	X		
Alt. = alternative				

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears.

17.4.3 Alternative 1

17.4.3.1 Program

Impact REC-1. Would Alternative 1 (Program) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?

Los Coyotes Water Reclamation Plant – Process Optimization

Construction

Construction of process optimization at the LCWRP would involve treatment system modifications, ancillary support facilities, other in-plant upgrades, and flow equalization through the addition of belowground storage capacity beneath a portion of the existing Iron-Wood Nine Golf Course driving range (shown on Figure 17-1). The length of construction would be about 1 to 2 years and would likely be implemented between 2018 and 2028, depending on future flows, recycled water demands, regulatory requirements, and funding considerations.

Construction would require closure of the Iron-Wood driving range for the entire duration of construction activities. The remainder of the Iron-Wood Nine Golf Course would continue to be open and accessible to the public during construction of process optimization; however, patrons of the Iron-Wood Nine Golf Course would be exposed to noise levels of up to 86 decibels (A-weighted) (dBA) as a result of construction activities within 50 feet of the golf course. In addition to closure of the driving range, exposure to construction noise would reduce the recreational enjoyment for patrons of the Iron-Wood Nine Golf Course. Upon completion of construction of process optimization, construction noise would cease, and the Iron-Wood driving range would be returned to its existing condition and re-opened for public use.

The San Gabriel River is adjacent to the LCWRP property to the west, and an existing paved pedestrian trail is on the eastern bank. Construction of process optimization would occur within approximately 500 feet of the pedestrian trail, potentially exposing users to a noise level of up to 60 dBA. Although construction noise would be audible at this distance, it would be masked by heavy vehicular traffic on local roadways and the SR-91 freeway to the south and would not reduce recreational enjoyment for users of the pedestrian trail. Furthermore, users of the pedestrian trail typically spend only a few minutes on the portion of trail adjacent to the LCWRP property during which they would be exposed to construction noise.

Installation of underground flow equalization tanks associated with process optimization would require the addition of approximately 80 daily truck trips during soil removal and pouring of concrete, anticipated to occur for approximately 9 months. In addition, approximately 20 daily worker trips would be required for the entire 1 to 2 year duration of construction activities related to process optimization. As discussed in Chapter 18, the carrying capacity of the surrounding roadways can safely accommodate the addition of approximately 80 daily truck trips and approximately 20 daily worker trips without significantly increasing congestion and, therefore, would not limit access to the Iron-Wood Nine Golf Course. Access to the San Gabriel River is currently not provided in the vicinity of the LCWRP; therefore, users of the pedestrian trail would not be impacted by construction traffic. Upon completion of construction of the process optimization facilities, construction traffic would cease, and traffic levels would return to a level comparable to that existing prior to construction.

The city of Cerritos does not have an adopted park standard; however, city guidelines recommend a ratio of 3 acres of parks per 1,000 residents, and the city currently owns or maintains 187.2 acres of parks for a ratio of approximately 3.6 acres of parks per 1,000 residents (based on 51,488 residents as reported in the 2000 Census). The Iron-Wood Nine Golf Course totals 22.1 acres, approximately 6.4 acres of which are within the driving range. Removal of the Iron-Wood driving range would reduce the total acreage of parks to 180.8 acres for a ratio of approximately 3.5 acres per 1,000 residents. The ratio of parks per 1,000 residents would continue to exceed city guidelines even with temporary closure of the Iron-Wood driving range.

For the duration of construction activities during which the 6.4-acre driving range would be inaccessible, city residents would continue to have access to 180.8 acres of city-owned or city-maintained parks as well as other recreational facilities including community centers, sports facilities, school playfields, swimming facilities, fitness centers, and a senior center. Furthermore, although there are no other driving ranges within the city of Cerritos, there are a number of other driving ranges and golf courses in the vicinity of the Iron-Wood Nine Golf Course including: the La Mirada Golf Course approximately 6 miles to the northeast; Stadium Golf Center approximately 7 miles to the southwest; Recreation Park Golf Course approximately 7.5 miles to the south; and HG Miller Golf Course approximately 8 miles to the southeast. Even with the temporary loss of the Iron-Wood driving range and increased exposure to construction noise at the Iron-Wood Nine Golf Course and along the stretch of San Gabriel River trail bordering the LCWRP property, city residents would continue to have access to an adequate amount of high-quality recreational facilities within the vicinity of the city of Cerritos. Therefore, impacts would be less than significant.

CEQA Impact Determination

Construction of Alternative 1 (Program) would not result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

17.4.3.2 Project

Alternative 1 (Project) would result in no impacts or less than significant impact on terrestrial recreation. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A).

17.4.3.3 Impact Summary – Alternative 1

Impacts on recreation analyzed in this EIR/EIS for Alternative 1 (Program) are summarized in Table 17-4. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

As determined in the Preliminary Screening Analysis, Alternative 1 (Project) would result in no impacts or less than significant impacts on terrestrial recreation; therefore, Alternative 1 (Project) is not evaluated in this chapter. Marine recreation is discussed in Chapter 13.

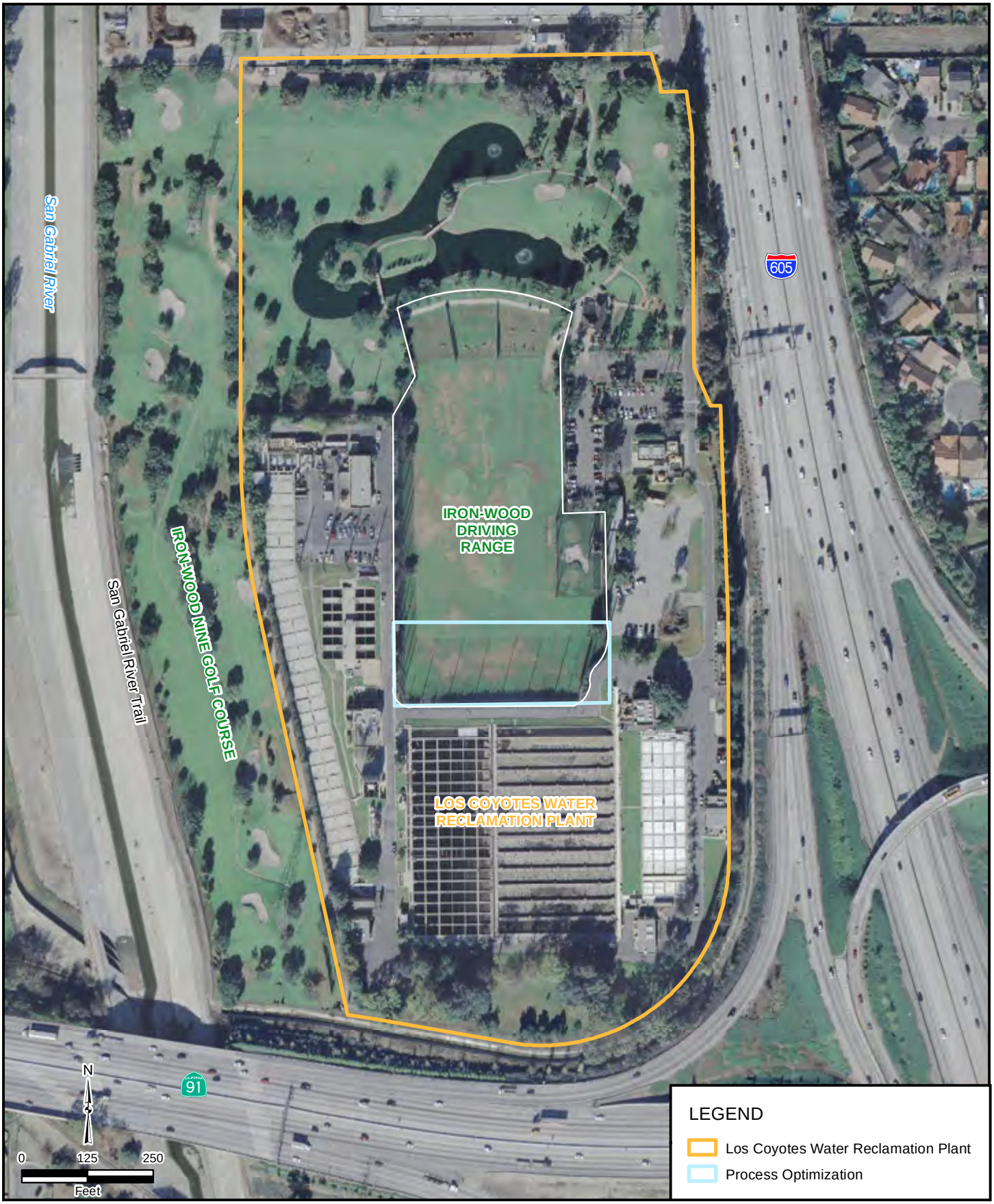


FIGURE 17-1

CLEARWATER Program

Los Coyotes Water Reclamation Plant
Parks and Recreation Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

Table 17-4. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact REC-1. Would Alternative 1 (Program) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?			
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

17.4.4 Alternative 2

17.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

17.4.4.2 Project

Alternative 2 (Project) would result in no impacts or less than significant impacts on terrestrial recreation. A detailed discussion on the determinations can be found in the Preliminary Screening Analysis (Appendix 1-A).

17.4.4.3 Impact Summary – Alternative 2

Impacts on recreation for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 17-4. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

As determined in the Preliminary Screening Analysis, Alternative 2 (Project) would result in no impacts or less than significant impacts on terrestrial recreation; therefore, Alternative 2 (Project) is not evaluated in this chapter. Marine recreation is discussed in Chapter 13.

17.4.5 Alternative 3

17.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

17.4.5.2 Project

Impact REC-1. Would Alternative 3 (Project) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?

Shaft Site – JWPCP West

Construction

CEQA Analysis

Construction of the JWPCP West shaft site would occur primarily in the 17 acres south of West Lomita Boulevard and west of Figueroa Boulevard (shown on Figure 17-2). The length of construction would be about 1 year and construction of the shaft would likely be completed in 2015. It is estimated that tunneling activities at the JWPCP West shaft site would occur for an additional 5 years and would likely be completed in about 2021. Both the Wilmington Athletic Complex and the Wilmington Boys and Girls Club are located approximately 50 feet east of the JWPCP West shaft site on the opposite side of Figueroa Boulevard.

Overall, construction activities at the shaft site would generate noise throughout the approximately 6.5-year construction period. As discussed in Chapter 14, construction activity would occur within about 100 feet of useable portions of the Wilmington Athletic Complex. Assuming that noise barriers would be erected between the major sources of noise at the shaft site and Wilmington Athletic Complex, construction noise levels of up to 71 dBA may be audible at the athletic complex above ambient traffic noise levels. Construction noise would potentially reduce the recreational enjoyment for patrons of the Wilmington Athletic Complex. However, it should be noted that noise generated by cheering crowds at recreational fields often exceeds the projected construction noise level at this location (see discussion in Chapter 14); therefore, it is not anticipated that patrons would stop utilizing these athletic fields as a result of construction noise. Construction noise would also be audible at the Wilmington Boys and Girls Club, useable portions of which are located approximately 100 feet from construction activities; however, there are no outdoor uses at this facility and construction noise would be inaudible to indoor uses. Impacts would be less than significant. Upon completion of construction at the shaft site, noise levels would return to a level comparable to that which existed prior to construction.

As described in Chapter 18, construction activities at the JWPCP West shaft site would generate additional daily truck trips and worker trips along Figueroa Boulevard and/or West Lomita Boulevard for the entire 6.5-year construction duration. However, the carrying capacity of the surrounding roadways can safely accommodate the higher traffic levels without significantly increasing congestion and, therefore, access to the Wilmington Athletic Complex or the Wilmington Boys and Girls Club would not be limited. Impacts would be less than significant. Upon completion of construction at the shaft site, traffic levels would return to a level comparable to that which existed prior to construction.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

FIGURE 17-2

CLEARWATER Program

JWPCP West Shaft Site
Parks and Recreation Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

Shaft Site – Angels Gate

Construction

CEQA Analysis

Construction of the Angels Gate shaft site would require the use of approximately 3 acres (shown on Figure 17-3). Of these 3 acres, approximately 1.4 acres is currently used as a secondary parking lot for nearby parks. Site preparation activities would consist of clearing, grubbing, grading, and equipment mobilization. The length of construction would be about 8 to 9 months and would likely be completed in about 2019. It is estimated that offshore tunneling activities at the Angels Gate shaft site would occur for an additional 1.5 years and would likely be completed in about 2021. Tunneling activities at the shaft site would be limited to construction worker access, tunnel boring machine maintenance, and tunnel support systems such as ventilation and power. Recreational facilities surrounding the shaft site include Point Fermin Park located approximately 120 feet to the south, Lookout Point Park located approximately 350 feet to the north, Joan Milke Flores Park located approximately 600 feet to the northwest, and Angels Gate Park located approximately 1,000 feet to the north.

Overall, construction activities at the shaft site would generate noise throughout the approximately 2.5-year construction period. As discussed in Chapter 14, assuming that noise barriers would be erected around the major sources of noise at the Angels Gate shaft site, park uses located within a 275-foot radius of the shaft site would be exposed to construction noise levels of 63 dBA or more (an increase of 5 dB above the ambient level), which would exceed the local noise ordinance and result in significant impacts. Both Lookout Point Park and Joan Milke Flores Park are located outside the 275-foot radius and would not be exposed to construction noise levels that exceed the local noise ordinance. Construction noise levels of up to 72 dBA may be audible at Point Fermin Park, located only 120 feet south of the shaft site, and impacts would be significant. Additionally, the noise barrier may not effectively reduce construction noise levels at recreational use areas at Angels Gate Park because the park is located more than 40 feet in elevation above the shaft site. Given the ground elevation difference, construction noise would likely only be audible at locations near the terrain edge of the park, where there is a direct line of sight to the shaft site, because of the acoustical shielding effects of the terrain edge. Therefore, construction noise levels would be significant in portions of Angels Gate Park. Construction noise would potentially reduce the recreational enjoyment for patrons of the Point Fermin Park and Lookout Point Park for the duration of construction at the shaft site. Implementation of MM REC-1a and MM REC-1b would reduce impacts at these two parks to less than significant.

Upon completion of construction at the shaft site, noise levels would return to a level comparable to that which existed prior to construction.

As described in Chapter 18, construction activities at the Angels Gate shaft site would generate additional daily truck trips and worker trips along South Gaffey Street for the entire 2.5-year construction duration. However, the carrying capacity of the surrounding roadways can safely accommodate the higher traffic levels without significantly increasing congestion and, therefore, would not limit access to the parks and recreational facilities in the vicinity of the Angels Gate shaft site. Impacts would be less than significant. Upon completion of construction at the shaft site, traffic levels would return to a level comparable to that which existed prior to construction.

Approximately 1.4 acres of the Angels Gate shaft site are currently accessible as unmarked secondary parking. Assuming a parking ratio of approximately 125 vehicles per acre in an unmarked parking lot, this secondary parking lot could accommodate a total of approximately 175 vehicles. The city of Los Angeles does not have parking standards or requirements for parks or recreational facilities. There is

onsite parking at all of the parks in the vicinity of the shaft site as well as on-street parking along West Paseo Del Mar, South Gaffey Street, Shepard Street, and most side streets in the surrounding neighborhoods that would be available for public use during the 2.5-year construction period. Visitors to the parks and recreational facilities in the vicinity of the Angels Gate shaft site would not be substantially affected by the loss of this secondary parking lot. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) would result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources. Impacts under CEQA would be significant before mitigation.

Mitigation

MM REC-1a (same as MM NOI-4a). Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following:

- Limit construction operations to exempt hours
- Locate equipment as far as practical from noise-sensitive uses
- Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation
- Prohibit gasoline or diesel engines from having unmuffled exhaust
- Use noise-reducing enclosures around noise-generating equipment
- Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission

MM REC-1b (same as MM NOI-4b). Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.

Residual Impacts

MM REC-1a and MM REC-1b would reduce the significant impacts associated with construction activities at the Angels Gate shaft site. The mitigation measures would reduce noise at sensitive receptors to below local standards. Therefore, residual impacts would be less than significant.

FIGURE 17-3

CLEARWATER Program

Angels Gate Shaft Site
Parks and Recreation Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

NEPA Impact Determination

Construction at the Angels Gate shaft site for Alternative 3 (Project) would result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources. Impacts under NEPA would be significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM REC-1a and MM REC-1b (same as MM NOI-4a and MM NOI-4b).

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact REC-2. Would Alternative 3 (Project) increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Shaft Site – JWPCP West

Construction

CEQA Analysis

As discussed under Impact REC-1, construction activities at the JWPCP West shaft site are not anticipated to encourage patrons of either the Wilmington Athletic Complex or Wilmington Boys and Girls Club to use other facilities, increasing their use to an extent that substantial physical deterioration of those facilities would occur or be accelerated. Furthermore, any potential construction noise and traffic impacts on these facilities would be temporary for the duration of the construction activities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

As discussed under Impact REC-1, construction activities at the Angels Gate shaft site are not anticipated to significantly deter use of the nearby Point Fermin Park, Lookout Point Park, Joan Milke Flores Park, or Angels Gate Park. Construction noise may be audible at the Joan Milke Flores Park and Angels Gate Park; however, ambient noise levels at these locations are generally within 5 dB of the anticipated noise levels from construction activities and, therefore, would not reduce recreational enjoyment of these areas. Although construction noise would potentially reduce the recreational enjoyment for patrons of the Point Fermin Park and Lookout Point Park, noise would only occur for the duration of construction, which is anticipated to last for approximately 2.5 years. Patrons of these parks and recreational facilities are not expected to use other facilities during the construction period in a manner that would cause or accelerate substantial physical deterioration of those facilities. However, in the event that a percentage of patrons do utilize other facilities, this demand would be distributed among the large number of parks and recreational

facilities in the area and region, and would likely return to existing levels once construction noise ceases. Furthermore, due to the substantial amount of onsite and on-street parking available at the existing parks and recreational facilities, the temporary loss of secondary parking at the Angels Gate shaft site is not anticipated to increase parking demand to a level that it would deter patrons from visiting the area. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of these facilities would occur or be accelerated. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of these facilities would occur or be accelerated. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

17.4.5.3 Impact Summary – Alternative 3

Impacts on recreation for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 17-4. Impacts on terrestrial recreation analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 17-5. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables. Marine recreation is discussed in Chapter 13.

Table 17-5. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact REC-1. Would Alternative 3 (Project) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Significant Impact During Construction	N/A	MM REC-1a (same as MM NOI-4a). Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following: ▪ Limit construction operations to exempt hours ▪ Locate equipment as far as practical from noise-sensitive uses ▪ Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation ▪ Prohibit gasoline or diesel engines from having unmuffled exhaust ▪ Use noise-reducing enclosures around noise-generating equipment ▪ Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission	CEQA Less Than Significant Impact During Construction

Table 17-5 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
			MM REC-1b (same as MM NOI-4b). Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.	
	NEPA Significant Impact During Construction	Indirect	MM REC-1a (same as MM NOI-4a) MM REC-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact During Construction
Impact REC-2. Would Alternative 3 (Project) increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

17.4.6 Alternative 4 (Recommended Alternative)

17.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

17.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years.

Impact REC-1. Would Alternative 4 (Project) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?

Shaft Site – Royal Palms

Construction

CEQA Analysis

The Royal Palms shaft site would be located within approximately 1.1 acres of Royal Palms Beach at the bottom of the bluff and surrounded by parking lots and the beach itself (shown on Figure 17-4). Construction would involve site preparation activities consisting of clearing, grubbing, grading, and equipment mobilization as well as construction of the shaft site. Construction of the shaft site would take approximately 6 to 9 months, and another 15 to 18 months would be required to connect the tunnel to the existing ocean outfalls for a total duration of approximately 2 years. Construction is anticipated to last from 2019 to 2021. The White Point Nature Preserve is located approximately 500 feet to the northeast, and White Point Park is located about 1,000 feet to the southeast.

Construction activities related to the shaft site would generate construction noise for the entire duration of construction, estimated to be approximately 2 years. As discussed in Chapter 14, assuming that a noise barrier would be erected between the major sources of noise at the shaft site and nearby sensitive receptors, park uses located within a 275-foot radius of the shaft site would be exposed to construction noise levels of 63 dBA or more (an increase of 5 dB above the ambient level), which would exceed the local noise ordinance and result in significant impacts. White Point Park and White Point Nature Preserve are located outside the 275-foot radius, and patrons would be exposed to less than significant construction noise levels of 56 dBA. The Royal Palms Beach picnic area and a majority of the shoreline where surfers and divers access the water are in excess of 350 feet from the Royal Palms shaft site, and impacts would be less than significant. However, the nearest potential recreational use of the shoreline begins approximately 100 feet to the southwest of construction. Patrons at the shoreline approximately 100 feet from the construction activity would be exposed to significant construction noise levels of up to approximately 72 dBA. Additionally, recreationists using the parking area adjacent to the construction activity (approximately 50 feet away) would be exposed to significant construction noise levels of up to 77 dBA. Construction noise would potentially reduce the recreational enjoyment for patrons of Royal Palms Beach for the duration of construction at the shaft site; however, recreational enjoyment would be most affected at those areas nearest construction, which primarily includes the surrounding parking lot and closest edges of shoreline. Impacts would be significant. Implementation of MM REC-1a and MM REC-1b would reduce impacts to less than significant. Upon completion of construction at the

Royal Palms shaft site, noise levels would return to a level comparable to that which existed prior to construction.

During construction, trucks and construction worker vehicles would utilize the only access to Royal Palms Beach, the two-lane Kay Fiorentino from West Paseo Del Mar. As discussed in Chapter 18, the carrying capacity of the surrounding roadways can safely accommodate the additional daily truck and worker commute trips without significantly increasing congestion; therefore, access to Royal Palms Beach, White Point Park, and White Point Nature Preserve would not be limited. Impacts would be less than significant. Upon completion of construction at the shaft site, traffic levels would return to levels comparable to that which existed prior to construction.

Throughout the duration of construction, the Royal Palms shaft site would require use of approximately 36 parking spaces during the off-peak recreational season, and few, if any, parking spaces during the peak recreational season. Although there is a limited amount of parking available at the beach (approximately 180), there is beach-accessible parking at White Point Park and along West Paseo Del Mar. Visitors to the parks and recreational facilities in the vicinity of the Royal Palms shaft site would not be substantially affected by the loss of parking from construction at the Royal Palms shaft site. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction at the Royal Palms shaft site for Alternative 4 (Project) would result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources. Impacts under CEQA would be significant before mitigation.

Mitigation

Implement MM REC-1a and MM REC-1b (same as MM NOI-4a and MM NOI-4b).

Residual Impacts

MM REC-1a and MM REC-1b would reduce the significant impacts associated with construction activities at the Royal Palms shaft site. The mitigation measures would reduce noise at sensitive receptors to below local standards. Therefore, residual impacts would be less than significant.

NEPA Impact Determination

Construction at the Royal Palms shaft site for Alternative 4 (Project) would result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources. Impacts under NEPA would be significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

Implement MM REC-1a and MM REC-1b (same as MM NOI-4a and MM NOI-4b).

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

FIGURE 17-4

CLEARWATER Program

Royal Palms Shaft Site
Parks and Recreation Facilities

Source: Sanitation Districts of Los Angeles County 2011, LARIAC 2007

Impact REC-2. Would Alternative 4 (Project) increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Shaft Site – Royal Palms

Construction

CEQA Analysis

As discussed under Impact REC-1, construction activities at the Royal Palms shaft site are not anticipated to significantly deter use of Royal Palms Beach.

Although construction noise would potentially reduce the recreational enjoyment for patrons of Royal Palms Beach, noise would only occur for the duration of construction. The facilities at Royal Palms Beach are unique because they provide surfing and diving opportunities that are not offered at other locations in the immediate vicinity. Although they may be inconvenienced, patrons of the facilities at Royal Palms Beach are expected to continue to visit this beach and are unlikely to utilize other facilities as an alternative to avoiding construction. However, in the event that a percentage of patrons do utilize other facilities, this demand would be distributed among a large number of parks and recreational facilities in the area and region, and would likely return to existing levels once construction noise ceases. Furthermore, due to the relatively small number of parking spaces that would be unavailable during construction as well as the parking that would continue to be accessible at Royal Palms Beach, White Point Park, White Point Nature Preserve, and along West Paseo Del Mar, the temporary loss of parking is not anticipated to increase parking demand to a level that would deter patrons from visiting the area. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

17.4.6.3 Impact Summary – Alternative 4

Impacts on recreation for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 17-4. Impacts on terrestrial recreation analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 17-6. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables. Marine recreation is discussed in Chapter 13.

Table 17-6. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact REC-1. Would Alternative 4 (Project) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 17-6 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Royal Palms	CEQA Significant Impact During Construction	N/A	MM REC-1a (same as MM NOI-4a). Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following: ▪ Limit construction operations to exempt hours ▪ Locate equipment as far as practical from noise-sensitive uses ▪ Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation ▪ Prohibit gasoline or diesel engines from having unmuffled exhaust ▪ Use noise-reducing enclosures around noise-generating equipment ▪ Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission MM REC-1b (same as MM NOI-4b). Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact During Construction	Indirect	MM REC-1a (same as MM NOI-4a) MM REC-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact During Construction

Table 17-6 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact REC-2. Would Alternative 4 (Project) increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

17.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an environmental impact report (EIR) must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the Joint Outfall System (JOS) in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the water reclamation plants (WRPs), as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

17.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the San Jose Creek Water Reclamation Plant (SJCWRP), WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994). Under Alternative 5 (Program), process optimization facilities at the LCWRP would not be constructed; therefore, no impacts on the Iron-Wood Nine Golf Course, San Gabriel River pedestrian trail, or any other parks or recreation facilities in the area would occur. Alternative 5 (Program) would result in less than significant impacts on recreation. The other program elements do not have recreational resources associated with them; therefore, no analysis is needed.

17.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into the Wilmington Drain as described in Section 3.4.1.5. Discharges into the Wilmington Drain would flow into Machado Lake (also known as Harbor Lake) in Ken Malloy Harbor Regional Park. Although the temporary release of secondary effluent to Machado Lake would be considered a violation of the JWPCP discharge permit, it would not substantially change the existing recreational conditions of the lake. Currently, swimming and boating is not allowed at the lake, and would likely not be allowed under this alternative. Although sport fishing at Machado Lake is permitted, officials recommend against eating any fish caught at Machado Lake. Recreational impacts resulting from the emergency discharge of secondary effluent into the Wilmington Drain would be less than significant.

If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the JWPCP could overflow and untreated wastewater could enter various water courses, such as the Dominguez Channel and the Los Angeles River. Both the Dominguez Channel and the Los Angeles River discharge into the Los Angeles Harbor. Current recreational uses, including boating throughout the entire harbor and fishing around Cabrillo Beach and Cabrillo Pier, would be affected by a decrease in water quality as discussed in Chapters 11 and 13. The discharge of untreated wastewater into the Los Angeles Harbor would result in a significant impact on these recreational uses. Alternative 5 (Project) would result in a substantial loss or diminished quality of recreational opportunities because of the discharge of untreated wastewater into various water courses. Impacts would be significant, and no mitigation is feasible.

17.4.7.3 Impact Summary – Alternative 5

Impacts on recreation for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 17-4, excluding process optimization. Therefore, there would be no impacts for Alternative 5 (Program). Significant impacts for Alternative 5 (Project) are summarized in Table 17-7.

Table 17-7. Impact Summary – Alternative 5 (Project)

Project Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact REC-1. Would Alternative 5 (Project) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation

17.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses as described in

Sections 3.4.1.6 and 17.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

17.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

17.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

17.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Significant impacts for Alternative 6 would be the same as summarized in Table 17-7 for Alternative 5 (Project).

17.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on recreation resulting from the construction and/or operation of program and/or project elements is provided in Table 17-8. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 17-8. Comparison of Significant Impacts and Mitigation for Recreation for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 3 (Project)			
Impact REC-1. Would Alternative 3 (Project) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?			
Shaft Site – Angels Gate	CEQA Significant Impact During Construction	MM REC-1a (same as MM NOI-4a). Employ noise-reducing construction practices such that construction noise does not exceed levels required by local standards. Measures that may be used to limit construction noise include the following: ▪ Limit construction operations to exempt hours ▪ Locate equipment as far as practical from noise-sensitive uses ▪ Require that all construction equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation ▪ Prohibit gasoline or diesel engines from having unmuffled exhaust ▪ Use noise-reducing enclosures around noise-generating equipment ▪ Construct additional barriers between noise sources and noise-sensitive land uses or take advantage of existing barrier features (e.g., terrain, structures) to block sound transmission	CEQA Less Than Significant Impact During Construction

Table 17-8 (Continued)

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
		MM REC-1b (same as MM NOI-4b). Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.	
	NEPA Significant Impact (Indirect) During Construction	MM REC-1a (same as MM NOI-4a) MM REC-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 4 (Project)			
Impact REC-1. Would Alternative 4 (Project) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?			
Shaft Site – Royal Palms	CEQA Significant Impact During Construction	MM REC-1a (same as MM NOI-4a) MM REC-1b (same as MM NOI-4b)	CEQA Less Than Significant Impact During Construction
	NEPA Significant Impact (Indirect) During Construction	MM REC-1a (same as MM NOI-4a) MM REC-1b (same as MM NOI-4b)	NEPA Less Than Significant Impact (Indirect) During Construction
Alternative 5 (Project)			
Impact REC-1. Would Alternative 5 (Project) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Alternative 6 (Project)			
Impact REC-1. Would Alternative 6 (Project) result in a substantial loss or diminished quality of recreational, educational, or visitor-oriented opportunities, facilities, or resources?			
Emergency Discharge	NEPA Significant Impact During Operation	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Operation

Chapter 18
TRANSPORTATION AND TRAFFIC (TERRESTRIAL)

18.1 Introduction

This chapter provides an overview of transportation resources in the vicinity of each element of the Clearwater Program, analyzes potential traffic impacts associated with the construction and operation of each element, determines the significance of impacts, and provides mitigation measures that would reduce these impacts where feasible. Transportation resources comprise the street and highway network, and include facilities for motorized and non-motorized transportation, traffic volumes and operating conditions, and public transit service. Impacts associated with vessel traffic and safety are discussed in Chapter 19.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the terrestrial transportation and traffic impact analysis for each program element is summarized by alternative in Table 18-1.

Table 18-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	C,O
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	C,O
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 18-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C,O
WRP Effluent Management	X	X	X	X	X	N/A	O	-
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	C,O
Biosolids Management	X	X	X	X	X	N/A	O	O
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 18-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 18.4.7 for a discussion of the No-Project Alternative.
[b] See Section 18.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element that was carried forward as a project. The location of the impact analysis for each project element is summarized by alternative in Table 18-2.

Table 18-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	C,O
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	C,O
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	C,O
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	C,O
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	C,O
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	C,O
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	C,O	C,O
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C,O
JWPCP West			X	X	N/A	N/A	C,O	C,O
TraPac	X	X			N/A	N/A	C,O	C,O
LAXT	X	X			N/A	N/A	C,O	C,O
Southwest Marine	X	X			N/A	N/A	C,O	C,O
Angels Gate			X		N/A	N/A	C,O	C,O
Royal Palms				X	N/A	N/A	C,O	C,O

Table 18-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	C,O	C,O
PV Shelf		X	X		N/A	N/A	C,O	C,O
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	C,O

[a] See Section 18.4.7 for a discussion of the No-Project Alternative.
[b] See Section 18.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

18.2 Environmental Setting

18.2.1 Regional Setting

The elements of the program and project alternatives are located in an area of approximately 660 square miles located in the southern and eastern portions of Los Angeles County and approximately 20 square miles located in the city of Los Angeles and the Port of Los Angeles. This area includes most of the urbanized area lying south of the San Gabriel and Santa Monica Mountains but excludes the San Fernando Valley and the area of the Los Angeles Basin north of the cities of Inglewood and El Segundo. The transportation system serving this area is a complex multimodal network designed to carry people and goods. It consists of roads and highways, bikeways and sidewalks, public transit (paratransit, bus, and rail), freight railroads, airports, seaports, and intermodal terminals.

The network of freeways and state highways supports high-capacity limited-access travel, whereas the arterial network provides high levels of signalized street capacity and serves as a feeder system for the regional freeways and local street system. The freeway and highway system is the primary means of regional person and goods movement, providing for direct vehicular access to employment, services, and goods. Regional vehicular access to the facilities affected by the project alternatives is provided by numerous freeways and highways, including State Route (SR-) 1, Interstate (I-) 5, I-10, SR-57, SR-60, SR-71, SR-91, SR-103/SR-47, I-105, I-110, I-405, I-605, and I-710.

The regional public transit system includes local shuttles, municipal and area-wide public bus operations, rapid rail transit operations, regional commuter rail services, and inter-regional passenger rail service. The Los Angeles County Metropolitan Transportation Authority (MTA) is the largest provider of public transit service in the study area, and its service is supplemented by numerous municipal transit lines and local shuttle services.

Non-motorized transportation includes biking and walking trips, which are typically shorter than motorized trips. Bicycle trips are facilitated and encouraged by bikeways. Class I bikeways are defined as separate off-street paths, Class II bikeways are defined as striped lanes within streets, and Class III bikeways are defined as signed bicycle routes. Pedestrian trips are facilitated by sidewalks and pathways that provide access to public transit stops and other destinations throughout the region. Sidewalks are present on most streets in the urbanized areas of the region.

18.2.2 Program Setting

Conveyance System

The conveyance system consists of an extensive network of sewer pipelines, which are generally located 5 to 25 feet underground and within public rights-of-way. Aside from manhole covers and pump stations, there is little physical or visual evidence of the system above ground. A full description of the conveyance system can be found in Section 3.3.1.1. Access to the conveyance system is obtained through manholes located along the pipelines.

San Jose Creek Water Reclamation Plant

Regional access to the San Jose Creek Water Reclamation Plant (SJCWRP) is provided by I-605 and SR-60 as shown on Figure 3-5. Local access is provided by Workman Mill Road.

Interstate 605

I-605 is a north-south freeway that extends north from I-405 in Long Beach to I-210 in Duarte. Near the SJCWRP, this freeway is eight lanes wide and has interchanges at Peck Road and Valley Boulevard. The existing average annual daily traffic (AADT) on the segment of this freeway between the SR-60 and Valley Boulevard interchanges is approximately 231,000, with a peak hour volume of approximately 15,700 vehicles (California Department of Transportation 2008).

State Route 60

SR-60 is an east-west freeway that extends between Los Angeles and Riverside Counties. Near the SJCWRP, this freeway is eight lanes wide and has an interchange with Crossroads Parkway. The existing AADT on this freeway between the I-605 and Crossroads Parkway interchanges is approximately 246,000, with a peak hour volume of approximately 16,100 vehicles (California Department of Transportation 2008).

Workman Mill Road

Workman Mill Road provides access to the SJCWRP. Immediately adjacent to the plant driveway, this road has four through lanes and a center left-turn lane. The posted speed limit on this segment is 45 miles per hour (mph).

A narrow, private two-lane access road adjacent to San Jose Creek, which runs beneath I-605, joins the eastern and western areas of the SJCWRP. This under crossing also includes a pedestrian walkway.

Pomona Water Reclamation Plant

Regional access to the Pomona Water Reclamation Plant (POWRP) is provided by SR-71 and SR-57. Local access is provided by Humane Way via Pomona Boulevard and Mission Boulevard.

State Route 57

SR-57 is a north-south freeway extending north from I-5 in Santa Ana to I-210 in Glendora. Near the POWRP, SR-57 is eight lanes wide and has an interchange at Temple Avenue. The existing AADT on the segment of this freeway between I-10 and Temple Avenue is approximately 160,000, with a peak hour volume of approximately 12,500 vehicles (California Department of Transportation 2008).

State Route 71

SR-71 is a north-south freeway extending north from SR-91 in Corona and ending at SR-57 just north of the POWRP. Near the POWRP, SR-71 is four lanes wide and has interchanges with Pomona Boulevard and Mission Boulevard. The existing AADT on the segment of this freeway between the Pomona

Boulevard and Mission Boulevard interchanges is approximately 69,000, with a peak hour volume of approximately 5,300 vehicles (California Department of Transportation 2008).

Humane Way

Humane Way, a north-south road, provides vehicular access to the POWRP and has four through lanes at the plant driveway, as shown on Figure 3-6. Vehicles can reach Humane Way via Pomona Boulevard to the north or Mission Boulevard to the south.

Pomona Boulevard

Pomona Boulevard, extends east-west 0.1 mile north of the plant, provides vehicle access from SR-57 (via the Temple Avenue Interchange) and SR-71 to Humane Way. Near the plant, this roadway is four lanes wide.

Mission Boulevard

Mission Boulevard, extending east-west 0.2 mile south of the plant, provides vehicle access from SR-57 (via the Temple Avenue interchange) and SR-71 to Humane Way. Near the plant, Mission Boulevard is four lanes wide with a raised center median.

Los Coyotes Water Reclamation Plant

Regional access to the Los Coyotes Water Reclamation Plant (LCWRP) is provided by I-605. Local access is provided by Alondra Boulevard and Piuma Avenue.

Interstate 605

I-605 is a north-south freeway extending north from I-405 to I-210 near Duarte. Near the LCWRP, this freeway is eight lanes wide and has an interchange at Alondra Boulevard. The existing AADT on the segment of this freeway between the SR-91 and Alondra Boulevard interchanges is approximately 294,000, with a peak hour volume of approximately 21,000 vehicles (California Department of Transportation 2008).

Piuma Avenue

Piuma Avenue, a north-south road, provides vehicular access to the LCWRP. This road is two lanes wide and has a posted speed limit of 35 mph. At its southern end, Piuma Avenue continues as the driveway of the LCWRP.

Alondra Boulevard

Alondra Boulevard, an east-west road that is 0.5 mile north of the plant, provides vehicle access from I-605 to Piuma Avenue. Near the plant, this roadway is six lanes wide with a raised center median.

Long Beach Water Reclamation Plant

Regional access to the Long Beach Water Reclamation Plant (LBWRP) is provided by I-605. Local access is provided by Willow Street–Katella Avenue.

Interstate 605

I-605 is a north-south freeway extending north from I-405 to I-210 near Duarte. Near the LBWRP, I-605 is eight lanes wide and has an interchange at Willow Street–Katella Avenue. The existing AADT on the segment of this freeway south of the Willow Street–Katella Avenue interchange is approximately 185,000, with a peak hour volume of approximately 13,400 vehicles (California Department of Transportation 2008).

Willow Street–Katella Avenue

Willow Street–Katella Avenue, an east-west road that is 0.1 mile north of the plant, provides access to the driveway of the LBWRP. Near the plant, this roadway is four lanes wide with a raised center median and has a posted speed limit of 40 mph. The raised center median on Willow Street–Katella Avenue limits the LBWRP driveway to right-turns in/right-turns out only.

Joint Water Pollution Control Plant

Regional access to the JWPCP is provided by I-110. Local access is provided by Sepulveda Boulevard, Figueroa Street, and Lomita Boulevard, as shown on Figure 3-9.

Interstate 110

I-110 is a north-south freeway extending north from Gaffey Street in San Pedro to Arroyo Parkway in Pasadena. Near the JWPCP, I-110 is eight lanes wide and has interchanges at Sepulveda Boulevard and Pacific Coast Highway. The existing AADT on the segment of this freeway between the Sepulveda Boulevard and Pacific Coast Highway interchanges is approximately 146,000, with a peak hour volume of approximately 11,500 vehicles (California Department of Transportation 2008).

Sepulveda Boulevard

Sepulveda Boulevard, an east-west road, lies along the northern edge of the JWPCP and provides secondary access to the JWPCP. Near the JWPCP, this roadway is four lanes wide with a planted center median and left-turn pockets. It has a posted speed limit of 40 mph.

Figueroa Street

Figueroa Street, a north-south road, lies between the eastern and western portions of the JWPCP and provides primary access to the JWPCP. Near the JWPCP, this roadway is four lanes wide with a center left-turn lane. North of Lomita Boulevard, it has a posted speed limit of 40 mph.

Lomita Boulevard

Lomita Boulevard, an east-west road, lies along the southern edge of the JWPCP and provides secondary access to the JWPCP. Near the JWPCP, this roadway is four lanes wide with a raised center median and left-turn lanes. It has a posted speed limit of 40 mph.

18.2.3 Project Setting

A detailed peak hour traffic impact analysis was conducted at selected locations (study intersections) in the vicinity of the shaft sites and along key access routes to assess the potential for short-term traffic impacts to occur during construction of the four alternatives (project). An assessment of potential traffic impacts during the operational phase of the project is also provided.

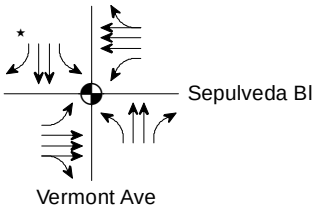
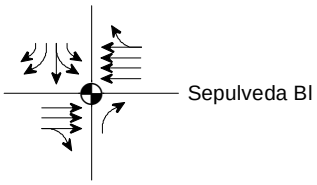
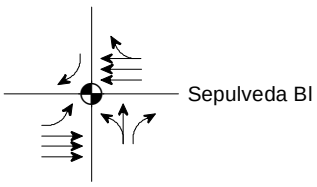
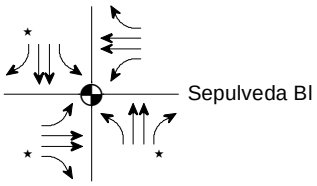
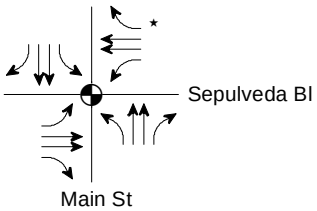
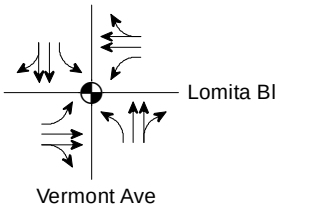
This Section describes the local street system and existing transit service near each shaft site. The existing characteristics of the street system in the vicinity of the alternatives are summarized in Table 18-3. This Section also describes the methodology used to assess the traffic conditions at each study intersection and presents the existing operating conditions at each location. The location of the shaft sites and the 22 study intersections selected for detailed traffic impact analysis are shown on Figure 18-1. The study intersections were selected on the basis of their location in relation to the alternatives and the potential for project-related traffic to travel through them. The existing lane configurations of the study intersections are illustrated on Figure 18-2. The existing (2010) baseline AM and PM peak hour traffic volumes used in this analysis are shown on Figure 18-3. New baseline traffic count data was collected during the weekday peak periods (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to

FIGURE 18-1

CLEARWATER Program

Study Area and Intersections

Source: Sanitation Districts of Los Angeles County 2011, Fehr & Peers 2010, Thomas Bros. 2011, ESRI 2011

	EXISTING CONDITIONS	FUTURE CONDITIONS
1. Vermont Ave & Sepulveda Bl		Same As Existing Conditions
2. SB I-110 Off-Ramp & Sepulveda Bl		Same As Existing Conditions
3. NB I-110 Off-Ramp & Sepulveda Bl		Same As Existing Conditions
4. Figueroa St & Sepulveda Bl		Same As Existing Conditions
5. Main St & Sepulveda Bl		Same As Existing Conditions
6. Vermont Ave & Lomita Bl		Same As Existing Conditions

LEGEND

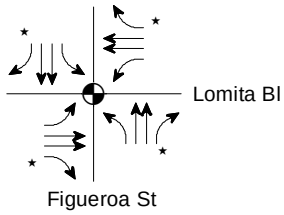
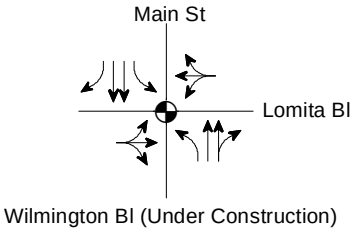
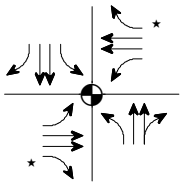
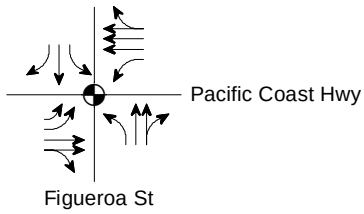
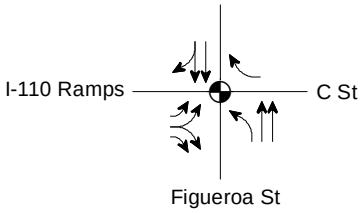
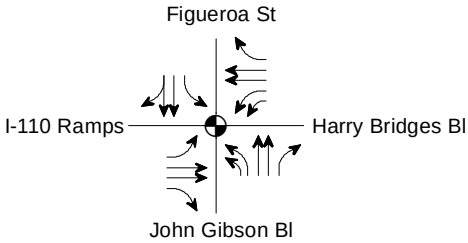
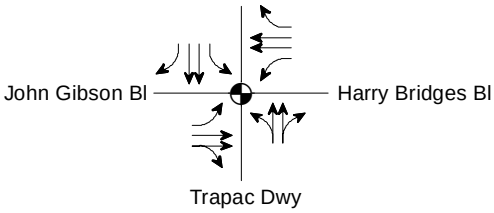
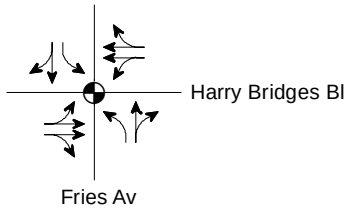
- Stop Controlled
- Traffic Signal
- Functional Right-Turn Lane

FIGURE 18-2

Lane Configuration at Study Intersections

CLEARWATER Program

Source: Fehr & Peers 2010

	EXISTING CONDITIONS	FUTURE CONDITIONS
7. Figueroa St & Lomita Bl		Same As Existing Conditions
8. Wilmington Bl & Lomita Bl		
9. Figueroa St & Pacific Coast Hwy		Same As Existing Conditions
10. Figueroa St & C St		
11. Figueroa St & Harry Bridges Bl		Intersection Does Not Exist in Future Conditions
12. Fries Av & Harry Bridges Bl		Same As Existing Conditions

LEGEND

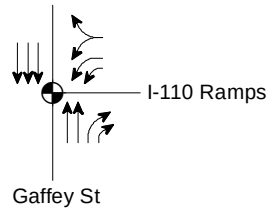
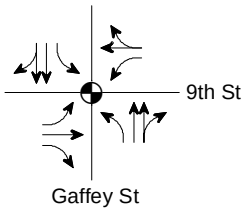
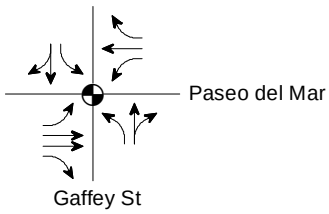
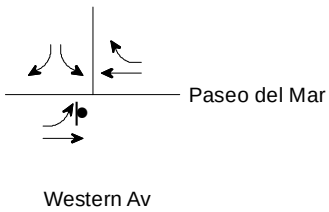
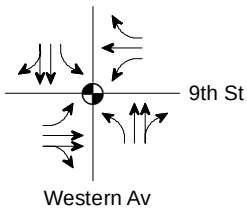
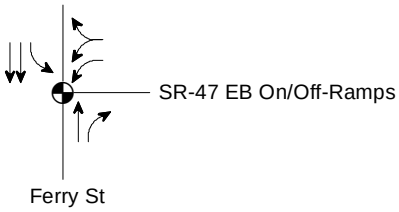
- Stop Controlled
- Traffic Signal
- Functional Right-Turn Lane

FIGURE 18-2 (continued)

Lane Configuration at Study Intersections

CLEARWATER Program

Source: Fehr & Peers 2010

	EXISTING CONDITIONS	FUTURE CONDITIONS
13. Gaffey St & I-110 Ramps		Same As Existing Conditions
14. Gaffey St & 9th St		Same As Existing Conditions
15. Gaffey St & Paseo del Mar		Same As Existing Conditions
16. Western Av & Paseo del Mar		Same As Existing Conditions
17. Western Av & 9th St		Same As Existing Conditions
18. Ferry St & SR-47 EB On/Off-Ramps		Same As Existing Conditions

LEGEND

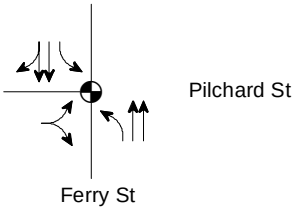
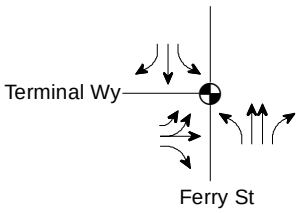
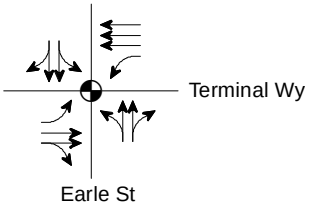
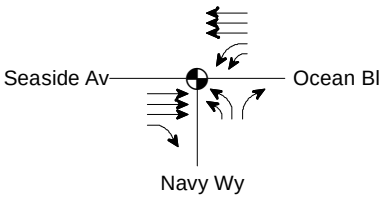
- Stop Controlled
- Traffic Signal
- Functional Right-Turn Lane

FIGURE 18-2 (continued)

Lane Configuration at Study Intersections

CLEARWATER Program

Source: Fehr & Peers 2010

	EXISTING CONDITIONS	FUTURE CONDITIONS
19. Ferry St & Pilchard St		Same As Existing Conditions
20. Ferry St & Terminal Wy		Same As Existing Conditions
21. Earle St & Terminal Wy		Same As Existing Conditions
22. Navy Wy & Seaside Av/Ocean Blvd		Same As Existing Conditions

LEGEND

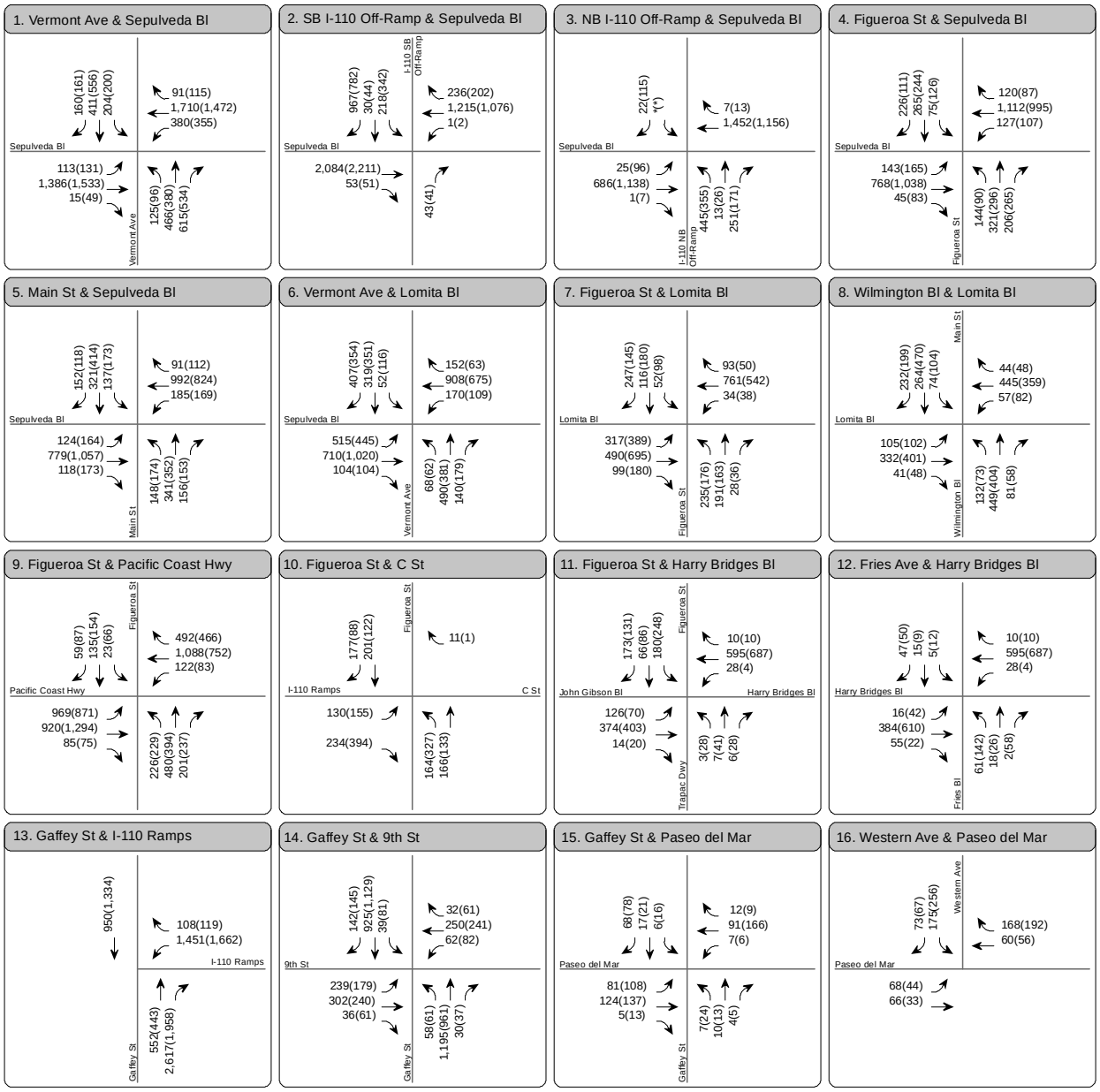
- Stop Controlled
- Traffic Signal
- Functional Right-Turn Lane

FIGURE 18-2 (continued)

Lane Configuration at Study Intersections

CLEARWATER Program

Source: Fehr & Peers 2010



LEGEND

A M(PM) Peak Hour Traffic Volume

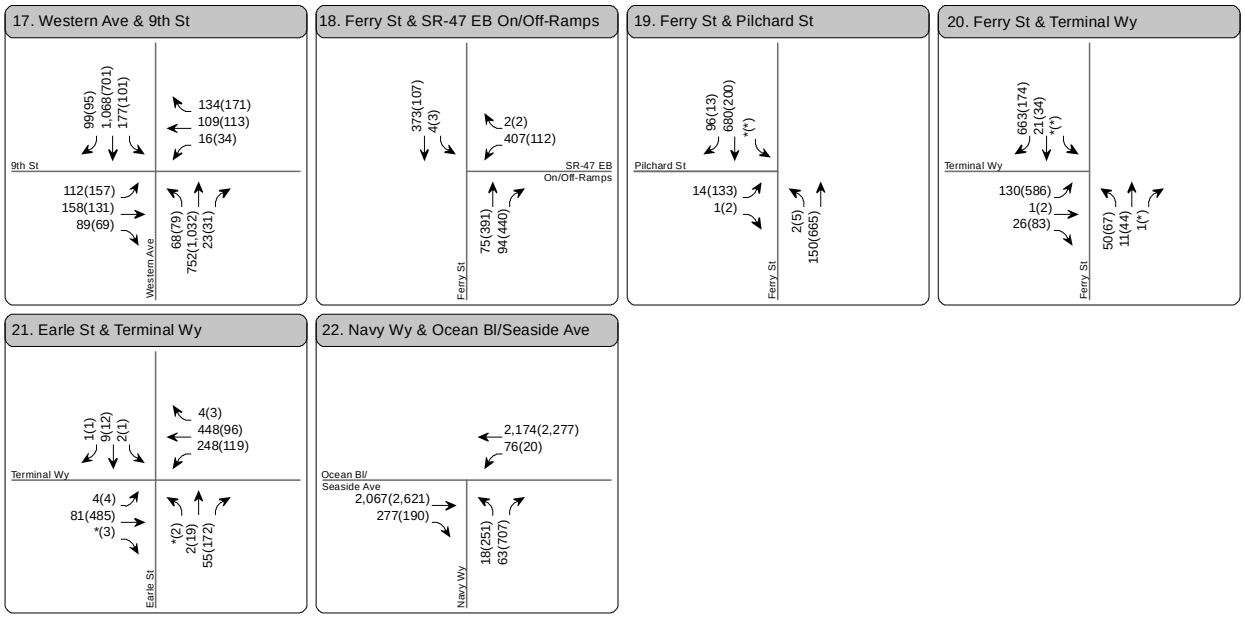
* No Traffic Data

FIGURE 18-3

CLEARWATER Program

Existing (2010) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010



LEGEND

A M(PM) Peak Hour Traffic Volume

* No Traffic Data

FIGURE 18-3 (continued)

CLEARWATER Program

Existing (2010) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010

6:00 p.m.) in late February and early March 2010 at all but three study intersections, which were analyzed using an alternative methodology, described below. The highest observed 1-hour (peak hour) volumes were analyzed. The baseline traffic count data for study intersections 10, 11, and 12 in Wilmington was drawn from the certified Final Environmental Impact Report (EIR) for the Wilmington Waterfront Development Project (ICF 2009). The weekday morning and evening peak hour traffic counts are included in Appendix 18-A. Because of the high percentage of trucks in the overall traffic stream in Wilmington and on Terminal Island, vehicle counts for study intersections 9 through 12 and 18 through 22 included the classification of passenger cars and large trucks. A factor of 2.0 was applied to the large trucks and a factor of 1.1 was applied to the bobtail trucks in the traffic stream to convert the traffic counts to passenger car equivalents (PCEs), and the resulting volumes were used in this analysis. At the time of the traffic counts, the eastbound-westbound capacity and signal operation at the Main Street–Wilmington Boulevard/Lomita Boulevard intersection was modified to accommodate a long-term construction project (through June 2010). A review of previous traffic count data along Lomita Boulevard showed that existing traffic volumes were not substantially affected. The existing level of service (LOS) reported at this location, however, is worse than under typical conditions. When the current construction project is completed, the roadway will be restored. Therefore, the future analysis of this study intersection reflects its typical configuration.

Table 18-3. Existing (2010) Roadway Characteristics

Segment	From	To	Lane NB	Lane SB	Median Type	Parking Restrictions NB	Parking Restrictions SB	Speed Limit (mph)
North/South Streets								
Figueroa Street	228th Street	234th Street	2	2	RM	PA (service)	PA (service)	40
	234th Street	Carriagedale Drive	2	2	2LT	PA (service)	PA	40
	Carriagedale Drive	Sepulveda Boulevard	2	2	2LT	NOT POSTED	NOT POSTED	40
	Sepulveda Boulevard	Lomita Boulevard	2	2	2LT	NPAT/72HR TP	NPAT	40
	Lomita Boulevard	R Street	2	2	2LT	TANP 10PM–6AM	NPAT	35
	R Street	Pacific Coast Highway	2	2	2LT	TANP 10PM–6AM	NPAT	35
	Pacific Coast Highway	L Street	2	2	2LT	NPAT	TANPAT	35
	L Street	Anaheim Street	2	2	2LT	PA	TANSAT	35
	Anaheim Street	Emden Street	2	2	DY	2HR 8AM–6PM	PA	35
	Emden Street	E Street	2	2	2LT	2HR 8AM–6PM	2HR 8AM–6PM	35
	E Street	Frigate Avenue	2	2	2LT	RZ	PA	35
	Frigate Avenue	C Street	2	2	2LT	PA	PA	35
	C Street	John S. Gibson Boulevard/ Harry Bridges Boulevard	2	2	DY	NSAT	NSAT	35
Vermont Avenue	Sepulveda Boulevard	Stonebryn Drive	2	2	RM	NPAT	RZ	40
	Stonebryn Drive	Lomita Boulevard	2	2	RM	PA	PA	40
	Lomita Boulevard	253rd Street	2	2	2LT	PA	PA	40
	253rd Street	255th Street	2	2	DY	NPAT	RZ/PA/TANPAT	35
	255th Street	Pacific Coast Highway	2	2	DY	NPAT	RZ/PA/TANPAT	35
Wilmington Boulevard	228th Street	236th Street	2	2	RM	PA (service)	PA	40
	236 Street	Sepulveda Boulevard	2	2	RM	PA	PA	40
	Sepulveda Boulevard	Lomita Boulevard	2	2	RM	NSAT	PA/NSAT	40
	Lomita Boulevard	Don Street	2	2	DY	NSAT	NSAT	35
	Don Street	Pacific Coast Highway	2	2	DY	PA	PA	35
	Pacific Coast Highway	L Street	1	2	2LT	1HR 8AM–6PM	PA	35
	L Street	Denni Street	1	2	2LT	PA	PA	35
	Denni Street	Opp Street	1	2	2LT	2HR 8AM–6PM	PA	35

Table 18-3 (Continued)

Segment	From	To	Lane NB	Lane SB	Median Type	Parking Restrictions NB	Parking Restrictions SB	Speed Limit (mph)
	Opp Street	Anaheim Street	1	2	DY	PA	PA	35
	Anaheim Street	Harry Bridges Boulevard	2	2	DY	PA	PA	30
John S. Gibson Boulevard	Figueroa Street	I-110 NB Ramps	2	2	2LT/ RM	TANSAT	TANSAT/PA	35/40
Western Avenue	Paseo Del Mar	25th Street	1	1	DY	TANPAT	TANSAT/PA	40
	25th Street	19th Street	2	2	DY	PA	PA	40
	19th Street	9th Street	2	2	RM	NPAT	RZ	40
	9th Street	Bynner Drive	2	2	2LT	PA	PA	40
Gaffey Street	Channel Street	Miraflores Avenue	2	2	DY	TANSAT	RZ	35
	Miraflores Avenue	Summerland Avenue/Gaffey Place	2	2	2LT/DY	TANSAT	TANSAT	35
	Summerland Avenue/Gaffey Place	I-110 Interchange	2	3	DY	TANSAT	TANSAT	35
	I-110 Interchange	Santa Cruz Street	4/3	3	RM	RZ/TANSAT	TANSAT/NS	35
	Santa Cruz Street	1st Street	3	3	DY	TANPAT	TANSAT	35
	1st Street	3rd Street	3	3	DY	TANS 7–9AM, 4–6PM	TANS 7AM–7PM	35
	3rd Street	5th Street	3	2	DY	TANS 7–9AM, 4–6PM, 1HR 9AM–4PM	TANS 7AM–7PM	35
	5th Street	7th Street	2	2	DY	1HR 8AM–6PM	1HR 8AM–6PM 30MIN	35
	7th Street	9th Street	2	2	DY	30MIN 8AM–6PM, 1 HR 8AM–6PM	1HR 8AM–6PM	35
	9th Street	11th Street	2	2	DY	1 HR 8AM–6PM	TANSAT/RZ	35
	11th Street	13th Street	2	2	DY	RZ/1HR 8AM–6PM	1HR 8AM–6PM/RZ	35
	13th Street	15th Street	2	2	DY	1HR 8AM–6PM	1HR 8AM–6PM	35
	15th Street	17th Street	2	2	DY	TANPAT/PA	PA	35
	17th Street	19th Street	2	2	DY	1HR 8AM–6PM/PA	1HR 8AM–6PM/PA	35
	19th Street	22nd Street	2	2	DY	PA	PA	35
	22nd Street	23rd Street	2	1	DY	PA	PA	35
	23rd Street	24th Street	1	1	DY	PA	PA	35

Table 18-3 (Continued)

Segment	From	To	Lane NB	Lane SB	Median Type	Parking Restrictions NB	Parking Restrictions SB	Speed Limit (mph)
	24th Street	25th Street	1	1	DY	TANPAT	TANPAT	20
	25th Street	27th Street	1	1	DY	PA	PA	35
	27th Street	31st Street	1	1	DY	PA	PA/RZ	35
	31st Street	32nd Street	1	1	DY	PA	NPAT	25
	32nd Street	33rd Street	1	1	DY	TANSAT	TANSAT	35
	33rd Street	36th Street	1	1	DY	TANSAT	TANSAT	25
	36th Street	Paseo Del Mar/Shepard Street	1	1	2 LT	PA	PA	35
Ferry Street	N Seaside Avenue	East Road	2	2	RM	NPAT	NPAT	25
	East Road	Terminal Way	2	2	RM/DY	NPAT	NPAT	25
Earle Street	Pilchard Street	Terminal Way	2	2	DY	PA/RZ	PA/RZ	25
	Terminal Way	Cannery Street	2	2	DY	PA	PA	35
S Seaside Avenue	Cannery Street	Wharf Street	2/1	1/2	DY	NSAT	NSAT	25
	Wharf Street	Reservation Point	1	1	DY	NSAT	NSAT	25
East/West Streets								
Sepulveda Boulevard	Vermont Avenue	I-110 Freeway	3	3	RM	NSAT	NSAT	40
	I-110 Freeway	Figueroa Street	3	3	RM	NSAT/PA	NSAT	40
	Figueroa Street	Main Street	2	2	RM	PA/1HR TP	PA/NSAT	40
	Main Street	Dolores Street	2	2	RM	2HR 7AM–6PM	PA	40
	Dolores Street	Marbella Avenue	2	2	RM	2HR 7AM–6PM/1HR TP	PA	40
	Marbella Avenue	Fries Avenue	2	2	RM	PA	PA	40
	Fries Avenue	Avalon Boulevard	2	2	RM	PA	1HR TP/PA	40
Lomita Boulevard	Vermont Avenue	I-110 Freeway	2	2	RM	TANP 10PM–6AM	TANPAT	40
	I-110 Freeway	Figueroa Street	2	2	2LT	NPAT	NPAT	40
	Figueroa Street	Main Street/Wilmington Boulevard	2	2	RM	PA	NPAT	40

Table 18-3 (Continued)

Segment	From	To	Lane EB	Lane WB	Median Type	Parking Restrictions EB	Parking Restrictions WB	Speed Limit (mph)
	Main Street/Wilmington Boulevard	Bayview Avenue	2	2	2LT	NPAT/PA	PA	
	Bayview Avenue	Avalon Boulevard	2	2	2LT	PA	PA	40
Pacific Coast Highway	Vermont Avenue	I-110 Freeway	3	3	2LT	TANSAT	TANS 6–9:30AM, 3–7PM, 1HR 9:30AM–7PM	40
	I-110 Freeway	Figueroa Street	3	2	2LT	TANS 7–9AM, 4–6PM	TANSAT	40
	Figueroa Street	Avalon Boulevard	2	2	2LT	TANS 7–9AM, 4–6PM	TANS 7–9AM, 4–6PM	40
Anaheim Street	I-110 Freeway	Figueroa Street	2	2	DY	NSAT	NSAT	35
	Figueroa Street	Mar Vista Avenue	2	2	DY	PA	NSAT	35
	Mar Vista Avenue	Hawaiian Avenue	2	2	DY	PA	PA	35
	Hawaiian Avenue	King Avenue	2	2	DY	PA	TANSAT	35
	King Avenue	Ronan Avenue	2	2	2LT	TANSAT	TANSAT	35
	Ronan Avenue	McDonald Avenue	2	2	DY	PA/RZ	PA	35
	McDonald Avenue	Bayview Avenue	2	2	DY	1HR 8AM–6PM	1HR 8AM–6PM	35
	Bayview Avenue	Neptune Avenue	2	2	DY	PA	PA	35
	Neptune Avenue	Lagoon Avenue	2	2	DY	PA	PA	30
	Lagoon Avenue	Island Avenue	2	2	DY	PA	1HR 8AM–6PM	30
	Island Avenue	Fries Avenue	2	2	2LT	PA/RZ	1HR 8AM–6PM	30
	Fries Avenue	Marine Avenue	2	2	DY	1HR 8AM–6PM (metered)	2HR 8AM–6PM (metered)	30
	Marine Avenue	Avalon Boulevard	2	2	DY	1HR 8AM–6PM (metered)	1HR 8AM–6PM (metered)/RZ	35
	Avalon Boulevard	Broad Avenue	2	2	DY	1HR 8AM–6PM/RZ	1HR 8AM–6PM/PA	35
	Broad Avenue	Lakme Avenue	2	2	DY	1HR 8AM–6PM	PA	35
	Lakme Avenue	Eubank Avenue	2	2	DY	PA	PA	35
	Eubank Avenue	Dominguez Avenue	2	2	2LT/DY	PA	NSAT/PA	35
	Dominguez Avenue	Stanford Avenue	2	2	DY	PA	PA	35
	Stanford Avenue	Flint Avenue	2	2	DY	PA	1HR 8AM–6PM	35
	Flint Avenue	Pioneer Avenue	2	2	DY	PA	PA	35

Table 18-3 (Continued)

Segment	From	To	Lane EB	Lane WB	Median Type	Parking Restrictions EB	Parking Restrictions WB	Speed Limit (mph)
	Pioneer Avenue	Watson Avenue	2	2	DY	PA/RZ	PA	35
	Watson Avenue	Alameda Street	2	2	2LT	RZ	PA	35
Harry Bridges Boulevard	Figueroa Street	Lakme Avenue	2	2	DY	TANSAT	TANSAT	35
	Lakme Avenue	Eubank Avenue	2	2	DY	PA	PA/TANSAT	35
	Eubank Avenue	Anaheim Street	2	2	DY	TANSAT	TANSAT	40
Paseo Del Mar	Graysby Avenue	Western Avenue	1	1	RM	PA	PA	35
	Walker Avenue	Barbara Street	1	1	2 LT	PA	PA	35
	Barbara Street	Meyler Street	1	1	2 LT	TANP 10PM–6AM	PA	35
	Meyler Street	Roxbury Street	1	1	2 LT	TANP 10PM–6AM	PA	35
	Roxbury Street	Gaffey Street	2/1	2/1	DY	TANSAT/PA	TANSAT	35
	Gaffey Street	California Street	1	1	DY	PA	PA	35
Ocean Boulevard	Vincent Thomas Bridge	Navy Way	3	3	RM	NSAT	NSAT	45
	Navy Way	Pier S Avenue	3	3	RM	NSAT	NSAT	45
	Pier S Avenue	Terminal Island Freeway	3	3	RM	NSAT	NSAT	45
N Seaside Avenue	Ferry Street	SR 47 On/Off-Ramp	1	1	2LT	TANSAT	TANSAT	40
Pilchard Street	Earle Street	Ferry Street	1	1	SDY	NPAT	NPAT	35
Terminal Way	S Seaside Avenue	Tuna Street	2	2	RM	NPAT	NPAT	25
	Tuna Street	Earle Street	2	2	DY	NPAT	NPAT	25
	Earle Street	Ferry Street	2	2	RM	NPAT	NPAT	25

Median Type:
DY = Double Yellow Centerline
SDY = Single Dashed Yellow Centerline
2LT = Two-Way Left-Turn Lane
RM = Raised Median
UD = Undivided Lane

Parking:
PA = Parking Allowed
NPAT = No Parking Anytime
NSAT = No Stopping Anytime
RZ = Red Zone - No Parking Allowed
TANS = Tow Away No Stopping
TANP = Tow Away No Parking
TANSAT = Tow Away No Stopping Any Time

Lanes:
= Number of Lanes

Other:
mph = miles per hour
NB = Northbound
SB = Southbound
EB = Eastbound
WB = Westbound

LOS is a qualitative measure used to describe the condition of traffic flow, ranging from excellent "free flow" conditions at LOS A to overloaded "stop and go" conditions at LOS F. The intersection capacity utilization method of intersection analysis, per the city of Carson requirements for analyzing signalized intersection conditions, was used to determine the intersection volume-to-capacity (V/C) ratio and corresponding LOS for each signalized study intersection in Carson. The Los Angeles Department of Transportation (LADOT) requires use of the critical movement analysis (CMA) method to analyze the LOS of signalized intersections (LADOT 2002). These methodologies determine the V/C ratio of an intersection based on the number of approach lanes, traffic signal phasing, and traffic volumes. The CalcaDB software package developed by LADOT was used to implement the CMA methodology at locations in Los Angeles. The V/C ratio was then used to find the corresponding LOS based on the definitions in Table 18-4. All but three of the 22 analyzed intersections are currently controlled by traffic signals; the exceptions are study intersections 10, 15, and 16. Four of the signalized study intersections in the city of Los Angeles are currently controlled by the city's automated traffic surveillance and control (ATSAC) system: Figueroa Street/Pacific Coast Highway, Gaffey Street/I-110 Ramps, Gaffey Street/ 9th Street, and Western Avenue/9th Street. In accordance with LADOT procedures, a capacity increase of 7 percent (0.07 V/C adjustment) was applied to reflect the combined benefits of ATSAC systems at these intersections.

Table 18-4. Level of Service Definitions for Signalized Intersections

Level of Service	Intersection Capacity Utilization	Definition
A	0.000–0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.601–0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701–0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801–0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901–1.000	POOR. Represents the most vehicles intersection approaches can accommodate; there may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source: LADOT 2002

Three study intersections are unsignalized and were analyzed using the stop-controlled methodologies from the Highway Capacity Manual (Transportation Research Board 2000). Study intersections 15 and 16 (Gaffey Street/Paseo Del Mar and Western Avenue/Paseo Del Mar) were analyzed using the all-way stop methodology. Study intersection 10 (I-110 Ramps–Harry Bridges Boulevard/Figueroa Street) was analyzed using the two-way stop methodology. For stop-controlled intersections, LOS depends on the amount of delay experienced by drivers on the stop-controlled approaches. Thus, for two-way stop-controlled intersections, LOS is based upon the average delay experienced by vehicles entering the intersection on the minor (stop-controlled) approaches while for all-way stop-controlled intersections, LOS is determined by the average delay for all movements through the intersection. The average delay criteria for the different LOS designations for stop-controlled intersections are presented in Table 18-5.

Table 18-5. Level of Service Definitions for Stop-Controlled Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	< 10.0
B	> 10.0 and < 15.0
C	> 15.0 and < 25.0
D	> 25.0 and < 35.0
E	> 35.0 and < 50.0
F	> 50.0

Source: Transportation Research Board 2000

The LOS methodologies previously described were applied to existing weekday AM and PM peak hour turning volumes to determine existing operating conditions at each of the study intersections. The results of this analysis are summarized in Table 18-6 and detailed LOS worksheets are included in Appendix 18-B. As shown in Table 18-6, all but four of the study intersections are currently operating at LOS D or better in both peak hours, generally considered desirable in urbanized areas. The exceptions are the intersections of Vermont Avenue/Sepulveda Boulevard, Vermont Avenue/Lomita Boulevard, Main Street–Wilmington Boulevard/Lomita Boulevard, and Figueroa Street/Pacific Coast Highway.

Table 18-6. Existing (2010) Intersection Level of Service Analysis

Intersection		Peak Hour	Existing (Year 2010) V/C or Delay	Existing (Year 2010) LOS
1	Vermont Avenue	AM	0.935	E
	Sepulveda Boulevard	PM	0.925	E
2	SB I-110 Off-Ramp	AM	0.858	D
	Sepulveda Boulevard	PM	0.817	D
3	NB I-110 Off-Ramp	AM	0.712	C
	Sepulveda Boulevard	PM	0.698	B
4	Figueroa Street	AM	0.710	C
	Sepulveda Boulevard	PM	0.725	C
5	Main Street	AM	0.681	B
	Sepulveda Boulevard	PM	0.774	C
6	Vermont Avenue	AM	0.963	E
	Lomita Boulevard	PM	0.799	C
7	Figueroa Street	AM	0.787	C
	Lomita Boulevard	PM	0.654	B
8	Main Street/Wilmington Boulevard[a]	AM	0.956	E
	Lomita Boulevard	PM	0.964	E
9	Figueroa Street	AM	0.929	E
	Pacific Coast Highway[b]	PM	0.862	D
10	Figueroa Street	AM	10.7 sec.	B
	I-110 Ramps/C Street[c d]	PM	13.6 sec.	B
11	Figueroa Street/TraPac Gate	AM	0.379	A
	Harry Bridges Boulevard[e]	PM	0.465	A
12	Fries Avenue	AM	0.313	A
	Harry Bridges Boulevard	PM	0.403	A

Table 18-6 (Continued)

Intersection		Peak Hour	Existing (Year 2010) V/C or Delay	LOS
13	Gaffey Street	AM	0.488	A
	I-110 Ramps[b]	PM	0.623	B
14	Gaffey Street	AM	0.712	C
	9th Street[b]	PM	0.716	C
15	Gaffey Street	AM	8.5 sec.	A
	Paseo Del Mar[c]	PM	9.1 sec.	A
16	Western Avenue	AM	11.1 sec.	B
	Paseo Del Mar[f]	PM	11.8 sec.	B
17	Western Avenue	AM	0.543	A
	9th Street[b]	PM	0.569	A
18	Ferry Street	AM	0.285	A
	SR-47 EB On/Off-Ramps	PM	0.343	A
19	Ferry Street	AM	0.270	A
	Pilchard Street	PM	0.312	A
20	Ferry Street	AM	0.476	A
	Terminal Way	PM	0.262	A
21	Earle Street	AM	0.231	A
	Terminal Way	PM	0.357	A
22	Navy Way	AM	0.520	A
	Ocean Boulevard/Seaside Avenue	PM	0.718	C

[a] Intersection is currently under construction; eastbound and westbound lanes and signal phasing are currently modified.
[b] Intersection is currently operating under ATSAC system. Per LADOT guidelines, a 7 percent capacity credit has been taken at intersections operating with ATSAC systems.
[c] Intersection is a four-way stop-controlled intersection. LOS is based on 2000 HCM four-way stop method. Average delay of the intersection is reported.
[d] Intersection would be reconfigured in the future per the conceptual plan for Harry Bridges Boulevard realignment.
[e] Intersection analyzed under existing conditions only. In the future, intersection would no longer exist per the conceptual plan for Harry Bridges Boulevard realignment.
[f] Intersection is a one-way stop-controlled intersection. LOS is based on 2000 HCM unsignalized method. Worst approach delay of the intersection is reported.

18.2.3.1 Tunnel Alignments

A detailed description of the alignments is provided in Section 3.3.2.1, and the alignments are illustrated on Figure 3-11. The alignments would be constructed underground and generally within public rights-of-way and there would be little physical or visual evidence of the system above ground. Potential transportation and traffic impacts associated with this alignment would occur in the vicinity of the shaft sites during construction as discussed in Section 18.4.

18.2.3.2 Shaft Sites

JWPCP East

The JWPCP East shaft site would be used in the construction of Alternatives 1 and 2 (Project). As shown on Figure 3-17, the JWPCP East shaft site would be located within the JWPCP property near the northwest corner of Main Street–Wilmington Boulevard/Lomita Boulevard in the city of Carson. Access

to this site would be from the existing JWPCP entrances via Figueroa Street, or the Sepulveda Boulevard JWPCP entrance. Descriptions of the streets surrounding this shaft site are provided in Table 18-3. The following transit lines serve the area around this shaft site.

- **Torrance Transit 3.** Line 3 operates on Main Street and Pacific Coast Highway in the vicinity of the JWPCP East shaft site, making stops between the Redondo Beach Pier and downtown Long Beach. This line provides service from approximately 4:30 a.m. to 10:30 p.m. on weekdays, with headways of 15 minutes.
- **Torrance Transit 7.** Line 7 operates on Lomita Boulevard, Wilmington Boulevard, and Pacific Coast Highway in the vicinity of the JWPCP East shaft site, making stops between the Redondo Beach Pier and the community of Wilmington. This line provides service from approximately 7:00 a.m. to 9:00 p.m. on weekdays, with headways of 10 minutes.
- **Carson North-South Shuttle.** This shuttle operates on Figueroa Street, Main Street, Sepulveda Boulevard, and Lomita Boulevard in the vicinity of the JWPCP East shaft site, providing bus service in the western area of Carson. This line provides service from approximately 5:20 a.m. to 6:03 p.m. on weekdays, with headways of 50 minutes.

Potential construction-period traffic impacts were assessed at the following nine study intersections in the vicinity of the JWPCP East shaft site.

1. Vermont Avenue/Sepulveda Boulevard
2. I-110 Southbound On- and Off-Ramps/Sepulveda Boulevard
3. I-110 Northbound Off-Ramp/Sepulveda Boulevard
4. Figueroa Street/Sepulveda Boulevard
5. Main Street/Sepulveda Boulevard
6. Vermont Avenue/Lomita Boulevard
7. Figueroa Street/Lomita Boulevard
8. Main Street–Wilmington Boulevard/Lomita Boulevard
9. Figueroa Street/Pacific Coast Highway

Existing peak hour LOS for these study intersections is shown in Table 18-6.

JWPCP West

The JWPCP West shaft site would be used under Alternatives 3 and 4 (Project). As shown on Figure 3-18, the JWPCP West shaft site would be located within the JWPCP property southwest of the Lomita Boulevard/Figueroa Street intersection in the city of Los Angeles. Access to this site would be provided from Figueroa Street via Lomita Boulevard, Pacific Coast Highway, or Sepulveda Boulevard. Descriptions of the streets surrounding this shaft site are provided in Table 18-3. The transit lines that serve this area are the same as those described under the JWPCP East shaft site.

Potential construction-period traffic impacts were assessed at the same nine intersections that were analyzed for impacts associated with the JWPCP East shaft site. Existing peak hour LOS for the selected study intersections is shown in Table 18-6.

TraPac

The Trans Pacific Container Service Corporation (TraPac) shaft site would be used under Alternatives 1 and 2 (Project). As shown on Figure 3-19, the TraPac shaft site would be located south of the Harry Bridges Boulevard/Wilmington Boulevard intersection within the Port of Los Angeles. Access to the shaft site would either be at the existing TraPac gate at Figueroa Street/Harry Bridges Boulevard or at the future TraPac gate accessed via the planned Lagoon Avenue grade separation. Descriptions of the streets surrounding this shaft site are provided in Table 18-3. The following transit lines serve the area around the TraPac shaft site.

- **Metro Line 202.** Line 202 travels along Anaheim Street, Avalon Boulevard, C Street, Broad Avenue, and D Street in the vicinity of the TraPac shaft site. This line provides north-south service between Willowbrook and Wilmington. The line runs from approximately 5:50 a.m. to 10:00 a.m. and from 4:00 p.m. to 7:20 p.m., with headways of approximately 30 minutes.
- **Metro Lines 246/247.** Lines 246 and 247 operate on Avalon Boulevard, Harry Bridges Boulevard, and John S. Gibson Boulevard in the vicinity of the TraPac shaft site. Between San Pedro and downtown Los Angeles, both lines operate over the same route, providing freeway express service via the Harbor Transitway to the Patsaouras Transit Plaza at Union Station in downtown Los Angeles. Both lines provide service from approximately 4:30 a.m. to 1:30 a.m. seven days a week, with headways from 10 to 60 minutes on weekdays and 30 to 60 minutes on weekends.

Potential construction-period traffic impacts were assessed at the following three study intersections in the vicinity of the TraPac shaft site.

1. Figueroa Street/I-110 Ramps–C Street
2. Figueroa Street–TraPac Gate/John S. Gibson Boulevard–Harry Bridges Boulevard
3. Fries Avenue/Harry Bridges Boulevard

Existing peak hour LOS for these study intersections is shown in Table 18-6.

LAXT

The Los Angeles Export Terminal (LAXT) shaft site would be used under Alternatives 1 and 2 (Project). As shown on Figure 3-20, the LAXT shaft site is located on Terminal Island on the east side of Ferry Street across from the Terminal Island Water Reclamation Plant. Access for construction workers would likely be via the Ferry Street/Eldridge Street intersection, and access for construction equipment would likely be via the LAXT driveways on Ferry Street. Descriptions of the streets surrounding this shaft site are provided in Table 18-3. The following transit line operates in the vicinity of the LAXT shaft site.

- **LADOT Commuter Express Line 142.** Line 142 travels along the Vincent Thomas Bridge, Seaside Avenue–Ocean Avenue, Ferry Street, and Terminal Way in the vicinity of the LAXT shaft site. This line provides service between Ports O'Call in east San Pedro, downtown San Pedro, and the Long Beach Transit Center via SR-47. The line runs from approximately 5:30 a.m. to 11:30 p.m., seven days a week, with headways of 25 to 60 minutes.

The following five intersections in the vicinity of the LAXT shaft site were analyzed.

1. Ferry Street/SR-47 Eastbound On- and Off-Ramps
2. Ferry Street/Pilchard Street
3. Ferry Street/Terminal Way

4. Earle Street/Terminal Way
5. Navy Way/Seaside Avenue–Ocean Boulevard (SR-47)

Existing peak hour LOS for these study intersections is shown in Table 18-6.

Southwest Marine

The Southwest Marine shaft site would be used under Alternatives 1 and 2 (Project). As shown on Figure 3-21, it would be located on the west side of Seaside Avenue south of the existing Southwest Marine shipbuilding complex on Terminal Island. Access to the Southwest Marine shaft site would be at Seaside Way via Terminal Way and Ferry Street. Descriptions for the streets surrounding this shaft site are provided in Table 18-3. The transit line that serves this area is the same as that described under the LAXT shaft site.

Potential construction-period traffic impacts were assessed at the same five intersections that were analyzed for impacts associated with the LAXT shaft site. Existing peak hour LOS for the selected study intersections is shown in Table 18-6.

Angels Gate

The Angels Gate shaft site would be used under Alternative 3 (Project). As shown on Figure 3-22, it would be located near the southern boundary of Angels Gate Park on the northwest corner of Gaffey Street/Shepard Street–Paseo Del Mar. Access to the Angels Gate shaft site would likely occur from Shepard Street–Paseo Del Mar via Gaffey Street. Descriptions for the streets surrounding this shaft site are provided in Table 18-3. The following transit lines serve the area around the Angels Gate shaft site.

- **Metro Lines 246.** Line 246 operates on Pacific Avenue in the vicinity of the Angels Gate shaft site. Between San Pedro and downtown Los Angeles, this line provides freeway express service via the Harbor Transitway to the Patsaouras Transit Plaza at Union Station in downtown Los Angeles. Line 246 provides service from approximately 4:30 a.m. to 1:30 a.m. seven days a week, with headways from 10 to 60 minutes on weekdays and 30 to 60 minutes on weekends.
- **MAX Line 3.** In the vicinity of the Angels Gate shaft site, this Municipal Area Express bus line travels along Paseo Del Mar and Pacific Avenue. It is a directional express line that brings passengers from the South Bay to employment centers in the El Segundo and Los Angeles International Airport area. The weekday morning northbound route has four buses with headways of 20 to 30 minutes starting at 5:20 a.m. The afternoon southbound route also has four buses with headways of 20 to 30 minutes starting at 5:00 p.m.

The following five intersections in the vicinity of the Angels Gate shaft site were analyzed.

1. Gaffey Street/I-110 Northbound On-Ramp and Southbound Off-Ramp
2. Gaffey Street/9th Street
3. Gaffey Street/Paseo Del Mar
4. Western Avenue/Paseo Del Mar
5. Western Avenue/9th Street

Existing peak hour LOS for these study intersections is shown in Table 18-6.

Royal Palms

The Royal Palms shaft site would be used under Alternative 4 (Project). As shown on Figure 3-23, it would be located adjacent to Royal Palms Beach, predominantly within the Sanitation Districts' property surrounding the existing ocean outfalls manifold that is located there. Access to this site would occur via the beach access road off of West Paseo Del Mar, 0.2 mile east of where Western Avenue begins. Descriptions for the streets surrounding this shaft site are provided in Table 18-3. The transit lines that serve this shaft site are the same as those described under the Angels Gate shaft site.

Potential construction-period traffic impacts were assessed at the same five intersections that were analyzed for impacts associated with the Angels Gate shaft site. Existing peak hour LOS for the selected study intersections is shown in Table 18-6.

18.2.3.3 Riser/Diffuser Areas

Construction of the riser and diffuser would take place at the end of the offshore alignments for Alternatives 1 through 3 (Project), where a riser would be constructed to physically connect the tunnel to seafloor diffusers, as depicted on Figure 3-24. The onshore tunnel alignment for Alternative 4 (Project) would be connected to the existing ocean outfalls at Royal Palms Beach.

San Pedro Shelf

A full description of the San Pedro Shelf (SP Shelf) can be found in Section 3.3.2.3. As stated in Section 3.3.2.3, the parts and materials for the riser and diffuser would be pre-assembled at the Pasha Terminal within the Port of Los Angeles.

Palos Verdes Shelf

A full description of the Palos Verdes Shelf (PV Shelf) can be found in Section 3.3.2.3. As stated in Section 3.3.2.3, the parts and materials for the riser and diffuser would be pre-assembled at the Pasha Terminal within the Port of Los Angeles.

Existing Ocean Outfalls

A full description of the existing ocean outfalls can be found in Section 3.3.2.3. The existing ocean outfalls extend from the existing manifold structure at Royal Palms Beach. Rehabilitation of the existing ocean outfalls would occur in the Pacific Ocean, with boats departing from within the Port of Los Angeles. Descriptions for the relevant streets within and adjacent to the Port of Los Angeles are provided in Table 18-3.

Potential construction-period traffic impacts were assessed at the same five intersections that were analyzed for impacts associated with the Angels Gate and Royal Palms shaft sites. Existing peak hour LOS for the selected study intersections is shown in Table 18-6.

18.3 Regulatory Setting

18.3.1 Federal

Federal regulations governing transportation facilities and activities do not apply to the environmental analysis of the Clearwater Program because no transportation facilities would be constructed.

18.3.2 State

Where construction of the Clearwater Program would affect highways under the jurisdiction of the California Department of Transportation (Caltrans), including surface streets designated as state highways and all freeways and freeway ramps, coordination with that agency would be required. This would include coordination with Caltrans to obtain encroachment permits for work within state rights-of-way and to obtain permits for the transportation of equipment or materials requiring the use of oversize or overweight vehicles.

18.3.3 Regional

The MTA is responsible for preparing the Congestion Management Program for Los Angeles County (CMP). The CMP addresses the impact of local growth on the regional transportation system and monitors the operations of the designated CMP roadway network. At the time of the notice of preparation (NOP) for the draft EIR/EIS, the current CMP was the 2004 CMP. Since that time, in October 2010, the Metro Board adopted the 2010 CMP for Los Angeles County.

18.3.4 Local

Local jurisdictions, including the city of Los Angeles, the city of Carson, and Los Angeles County, have primary responsibility for managing the various roadways that compose the local street network.

Local jurisdictions typically consider construction-related traffic effects as adverse but not significant because such effects, while sometimes inconvenient, are temporary. Additionally, local agencies typically require the preparation of traffic management plans for major construction projects that include designation of haul routes and areas for worker parking and work areas, allowable hours of construction activity, and, where in-street construction would occur, worksite traffic control plans. These plans are prepared to ensure that any construction-related effects are minimized to the greatest extent possible.

Local agencies designate certain streets, major/primary and secondary arterials, as truck routes for use by heavy vehicles. Some local streets, however, have weight limitations or restrictions that limit truck traffic. Typically, trucks are not permitted to travel on these streets except to obtain access to a specific site. Trucks are generally allowed to travel in a “reasonable fashion” to and from a work site and each haul-route permit is reviewed for specific application of its general guidelines.

In the vicinity of the shaft sites that would be used to construct the alternatives (project), the streets listed in Table 18-7 are designated as truck routes. All state highways in this area are designated truck routes.

Table 18-7. Designated Truck Routes in the Project Area

City of Carson	
Avalon Boulevard (between 223rd Street and the southern city limit)	Lomita Boulevard
Figueroa Street	Sepulveda Boulevard
Main Street (between Sepulveda Boulevard and Lomita Boulevard)	
City of Los Angeles	
9th Street	Alameda Street
Anaheim Street	Avalon Boulevard
Ferry Street	Figueroa Street
Fries Avenue	Gaffey Street
Harbor Boulevard	Harry Bridges Boulevard
John S. Gibson Boulevard	Lomita Boulevard
Pacific Avenue	Pacific Coast Highway
Paseo Del Mar	Seaside Avenue
Vermont Avenue	Western Avenue
Wilmington Boulevard (south of Lomita Boulevard)	

Construction traffic would be limited by noise ordinances that restrict the allowable days and hours when construction and excavation work is normally permitted. In the city of Los Angeles, work in residential areas is normally limited to the hours of 7:00 a.m. to 9:00 p.m. on weekdays and 8:00 a.m. to 6:00 p.m. on Saturdays, and no construction or excavation is permitted on Sundays or national holidays. In the city of Carson, the lowest limitations on construction noise are in place from 7:00 a.m. to 8:00 p.m. on weekdays and Saturdays.

18.4 Environmental Impacts and Mitigation Measures

18.4.1 Methodology and Assumptions

The objective of the traffic analysis was to evaluate the potential impacts of the program and project alternatives on the streets in the vicinity of each construction site. The traffic analysis addresses the short-term effects of the use of these streets by construction-related traffic. None of the project elements would require surface construction within public rights-of-way, nor would most of the program elements. The improvements to the conveyance system, one element of the program, would entail the periodic construction of pipelines and structures within public street rights-of-way, potentially including temporary lane closures, driveway blockages, detours, and disruptions to the normal movement of traffic, transit patrons, and pedestrians. The long-term impacts of operation of the facilities were assessed by evaluating the amount of traffic that would be generated under normal operation. Analysis of the alternatives (program) is at a programmatic level, identifying the types of impacts that may occur during construction but not specifying the location of those impacts.

Local agencies have established operational traffic impact criteria for assessing potential impacts of a project on the local street system. These criteria pertain to conditions after completion (i.e., during operation). The operational standards indicate that a project is considered to have a significant traffic impact if the increase in V/C ratio attributed to the project exceeds a specific threshold for each LOS (definitions of LOS are shown in Table 18-4 and Table 18-5). The cities of Los Angeles and Carson have established sliding scales under which the maximum allowable increase in the V/C ratio decreases as the existing V/C ratio increases, as shown in Table 18-8.

Table 18-8. Operational Impact Thresholds for Los Angeles, Los Angeles County, and Carson

V/C Ratio With Project Traffic	Maximum Allowable Increase in V/C Ratio
City and County of Los Angeles	
0.701 to 0.800 (LOS C)	<0.040
0.801 to 0.900 (LOS D)	<0.020
0.901 or greater (LOS E or LOS F)	<0.010
City of Carson	
0.901 or greater (LOS E or LOS F)	<0.020

Using these criteria, a project would not have a significant impact at an analyzed location in either the city or the county of Los Angeles if it were operating at LOS A or B after the addition of project-operational traffic. Also, a project would not have a significant impact on an analyzed location if it were operating at LOS C and the incremental change in the V/C ratio were less than 0.04, or if it were operating at LOS D and the incremental change in the V/C ratio were less than 0.02. If the location were operating at LOS E or F after the addition of project-operational traffic and the incremental change in the V/C ratio were greater than or equal to 0.01, a project would be considered to have a significant impact.

Although the methodology to calculate V/C ratios and the criteria are intended to identify potential traffic impacts during operation, they can also be applied to construction. During construction, however, such impacts would be considered adverse but not significant because the inconvenience for vehicular traffic is temporary.

The projected baseline traffic conditions are a conservative estimate of future conditions without development of the alternatives in 2017 (the year when construction is most intense for Alternatives 1 and 2) and 2019 (the year when construction is most intense for Alternatives 3 and 4). Since this analysis was prepared for the draft EIR/EIS, the project schedule has been shifted 1 year later. Thus, the scenarios analyzed as 2017 and 2019 are now planned to occur in 2018 and 2020. For reasons discussed below, this analysis still represents a conservative estimate of traffic conditions in the horizon years when peak project construction activity would actually occur. While the analysis is presented as it was done, Table 18-15, Table 18-25, and Table 18-32, which show the planned schedule of project activities, have been updated to reflect the current project schedule. These projections reflect the changes to existing traffic levels due to future baseline street improvements, area-wide background traffic growth, and traffic generated by other planned development in the surrounding area.

Several roadway improvements in the study area are expected to be completed by 2017. These improvements, which are the result of local or regional capital improvement programs or as mitigation for ongoing or entitled cumulative development (related) projects, would result in capacity changes at the specified locations. They are included in the adopted budgets for the Port of Los Angeles and the City of Los Angeles Capital Improvement Plan. These infrastructure improvements are listed below. Estimated traffic shifts associated with these improvements listed were drawn from the EIR for the Wilmington Waterfront Development project (ICF 2009).

- **I-110 and C Street Interchange Improvements.** This project would improve the flow of traffic from the I-110 ramps at C Street by consolidating two closely spaced intersections and facilitating heavy right-turn volumes with free-flowing turn lanes. As part of this improvement, C Street would be terminated in a cul-de-sac east of Figueroa Street and would no longer intersect with Figueroa Street. Harry Bridges Boulevard would be re-aligned to intersect with Figueroa Street across from the existing I-110 ramps. Also, part of the improvement would be the construction of

a northbound I-110 off-ramp to eastbound Harry Bridges Boulevard that would be grade-separated over Figueroa Street/John S. Gibson Boulevard east of the consolidated intersection. The existing TraPac terminal gate aligned with Figueroa Street would be relocated and accessed from Lagoon Avenue.

- **Lagoon Avenue Grade Separation.** Also known as the South Wilmington Grade Separation, this grade separation would provide access to all facilities south of Harry Bridges Boulevard, in addition to providing access to the relocated TraPac terminal gate. The purpose of this grade separation is to provide vehicular traffic with an alternative route that avoids existing at-grade railroad crossings on Fries Avenue and Broad Avenue. It would consist of an elevated road extending from Lagoon Avenue, passing over the existing railroad tracks, and connecting to Pier A Street and Fries Avenue. The existing TraPac terminal gate would be relocated to Lagoon Avenue.
- **Harry Bridges Buffer Area.** This project involves the construction of a recreational open space buffer area along the north side Harry Bridges Boulevard from Figueroa Street in the west to Lagoon Avenue in the east. This project involves the closure of all north-south streets between Figueroa Street and Avalon Boulevard except for King Avenue from Harry Bridges Boulevard to C Street. Existing and projected traffic volumes on these streets are low enough to be accommodated by the parallel routes that would remain open (Figueroa Street, King Avenue, Fries Avenue, Marine Avenue, Avalon Boulevard, and Broad Avenue).
- **Equipping All Signalized Study Intersections With Automated Traffic Surveillance and Control/Adaptive Traffic Control System.** The city of Los Angeles currently plans to equip all signalized intersections with ATSAC systems and install the state-of-the-art adaptive traffic control system (ATCS) as an additional feature of the ATSAC system. ATCS is the latest enhancement to the ATSAC system and uses a personal-computer-based traffic signal control software program that provides fully traffic-adaptive signal control based on real-time traffic conditions. ATCS allows for the automatic adjustment to the traffic signal timing strategy and control pattern in response to current traffic demands by allowing ATCS to control all three critical elements of traffic signal timing simultaneously, namely cycle length, phase split, and offset. In the analysis of future operating conditions, a total capacity increase of 10 percent (0.10 V/C adjustment) was applied to reflect the benefits of ATSAC/ATCS control at all signalized study intersections in Los Angeles.

Application of the growth factor found in the 2004 CMP (0.65 percent per year) was used to estimate total ambient growth to 2017 and 2019. The annual growth factor for this sub-region found in the 2010 CMP is slightly lower (0.51 percent per year), reflecting a revised regional growth forecast. Application of the current (lower) ambient growth factor for 8 or 10 years instead of the higher ambient growth factor for 7 or 9 years would yield over 10 percent less ambient growth than was used in this analysis (4.08 percent over 8 years instead of 4.55 percent over 7 years, and 5.1 percent over 10 years instead of 5.85 percent over 9 years). Thus, the analysis presented here uses a conservative assumption of ambient traffic growth. In addition, information was obtained from LADOT, the city of Carson, and the county of Los Angeles regarding approved or planned development projects (cumulative projects) in the vicinity of the alternatives (project). A list of these 50 projects and the estimated trip generation of each is presented in Table 18-9. Their locations are shown on Figure 18-4. Field checks were conducted to confirm that these projects have not yet been completed. Estimated cumulative project traffic was estimated on the basis of previous traffic studies and the trip generation rates contained in Trip Generation, 7th Edition (Institute of Transportation Engineers [ITE] 2003). These projections are conservative in that they do not in every case account for either the existing uses to be removed or the potential use of alternative travel modes (public transit, walking, etc.). The geographic distribution of cumulative project traffic was based on the

type and density of the proposed land uses, the geographic distribution of population from which the patrons and employees may be drawn, and the location of the each cumulative project in relation to the surrounding street system.

Table 18-9. Trip Generation Estimates for Cumulative Development Projects

					AM Peak Hour			PM Peak Hour		
Project Location		**Land Use**	**Size**		**In**	**Out**	**Total**	**In**	**Out**	**Total**
City of Carson										
1	129 E 223rd Street	Day Care Center	20	Students	8	8	16	8	8	16
2	440 E Sepulveda Boulevard	Office Building	10.66	KSF	27	4	31	15	76	91
3	101–155 E Lomita Boulevard	Retail	16.53	KSF	32	21	53	92	99	191
		Self Storage	105.49	KSF	9	7	16	14	13	27
	Subtotal				41	28	69	106	112	218
4	2211–2241 E Carson Street	Warehouse	270.764	KSF	138	30	168	36	107	143
5	20630 S Figueroa Street	Office Building	132.5	KSF	207	28	235	39	188	227
		Manufacturing Space	132.5	KSF	62	19	81	32	58	90
	Subtotal				269	47	316	71	246	317
6	708–724 E Carson Street	Condominiums	236	DU	18	86	104	82	41	123
7	21219 S. Figueroa Street	Office Building	11.437	KSF	29	4	33	16	76	92
8	Del Amo/ Dominquez Chanel	Mixed-Use Development	--		1,266	1,244	2,508	2,992	2,917	5,839
Unincorporated Los Angeles County										
9	958 W. Sepulveda Boulevard	Gym	30.351	KSF	16	21	37	63	60	123
		Less: Existing Discount Store	30.351	KSF	-47	-30	-77	-137	-148	-285
	Subtotal				-31	-9	-40	-74	-88	(162)
City of Los Angeles										
10	330 S. Centre Street	Police Headquarters	155	Employees	43	10	53	38	64	102
		Office	12.5	KSF						
11	281 W. 8th Street	Condominium	72	DU	7	32	39	42	21	63
		Retail	7	KSF						
12	550 S. Palos Verdes Street	Condominium	251	DU	15	62	77	29	17	46
		Retail	4	KSF						
13	LAUSD South Region High School #15	High School	810	Students	171	145	316	54	60	114
		Adult Evening School	450	Students	N/A	N/A	N/A	35	19	54
	Subtotal				171	145	316	89	79	168

Table 18-9 (Continued)

Project Location		Land Use	Size		AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
14	1717 W 255th Street, Harbor City	K-8 Private School	225	Students	85	55	140	(9)	(13)	(22)
15	1311 Sepulveda Boulevard, Torrance	Apartments	352	DU	4	15	19	36	19	55
16	2700 Lomita Boulevard, Torrance	Office Building	222	KSF	56	8	64	138	674	812
		Medical Office	129	KSF						
17	522 Flint Avenue, Wilmington	Rail Transfer Facility	4	Acres	16	17	33	14	15	29
18	1655 E Anaheim Street, Wilmington	Retail	5.332	KSF	104	67	171	65	70	135
19	2300 N Taper Avenue, San Pedro	Private High School	650	Students	359	162	521	52	59	111
20	755 L Street	Warehouse	135	KSF	72	50	122	9	102	111
21	1427 N Gaffey Street at Basin Street	Single Family Homes	135	DU	25	76	101	86	50	136
22	327 and 407 N Harbor Boulevard at O'Farrell Street	Condominiums	94	DU	7	34	41	33	16	49
		Specialty Retail	3	KSF	1	1	2	3	3	6
	Subtotal				8	35	43	36	19	55
23	931 N Frigate Avenue		128	Students	56	46	102	10	12	22
24	Berths 121–131		N/A	N/A	252	111	363	206	302	508
25	Berths 100–102		N/A	N/A	262	115	377	214	314	528
26	Berths 136–147		N/A	N/A	122	85	207	86	124	210
27	Wilmington Boulevard and Anaheim Street	Restaurant	N/A	N/A	149	155	304	114	94	208
28	Berths 171–181	Marine Terminal	N/A	N/A	143	118	261	93	139	232
29	West Side of Los Angeles Main Channel		N/A	N/A	646	462	1,108	562	751	1,313
30	407–409 7th Street and 390 W 8th Street	Residential Lofts	87	DU	9	42	51	57	28	85
		Specialty Retail	5	KSF						
31	255 W 5th Street at Centre Street	High-Rise Condominiums	220	DU	13	53	66	53	33	86
32	666 S Centre Street	Residential Lofts	116	DU	5	23	28	22	11	33
		Specialty Retail	20	KSF	7	4	11	18	23	41
	Subtotal				12	27	39	40	34	74
33	245–255 W 7th Street	Condominiums	26	DU	2	9	11	9	4	14

Table 18-9 (Continued)

Project Location		Land Use	Size		AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
34	111 N Harbor Boulevard and 203–233 Harbor Boulevard	Condominiums	158	DU	12	58	70	55	27	82
		Specialty Retail	8	KSF	2	2	4	7	9	16
	Subtotal				14	60	74	62	36	98
35	420–430 9th Street at Mesa	Condominiums	25	DU	2	9	11	9	4	13
36	210 N Palos Verdes Street	Apartments	49	DU	5	20	25	20	10	30
37	308 N Palos Verdes Street	Town Homes	16	DU	1	6	7	5	3	8
38	366–372 W 8th Street	Condominiums	18	DU	1	7	8	6	3	9
39	901 E Street	Warehouse	85	KSF	61	13	74	14	43	57
40	L Street and Lecouvreur Street	Single Family Homes	8	DU	2	4	6	5	3	8
41	Miner and 22nd Street	Cabrillo Marina Phase II	N/A	N/A	102	83	185	186	172	358
42	26900 S Western Avenue	Condominiums	1,725	DU	112	475	587	407	249	656
		Senior Housing	575	DU	21	25	46	38	25	63
		Baseball Fields	2	Fields	2	1	3	28	13	41
	Subtotal				135	501	636	473	287	760
43	Harry Bridges Boulevard and Avalon Boulevard	Restaurant, Industrial, Retail	180	KSF	150	39	189	83	191	274
44	Maritime Industrial	130 - Industrial Park	-13	Acres	-81	-17	-98	-21	-73	-94
45	Wilmington Boulevard and E Street	Condominiums	115	DU	9	42	51	40	20	60
		Apartments	120	DU	12	49	61	48	26	74
		Single Family Homes	76	DU	14	43	57	49	28	77
		Senior Housing	100	DU	4	4	8	7	4	11
	Subtotal				39	138	177	144	78	222
46	Berths 226–236	Container Terminal Expansion	N/A			N/A			N/A	
47	Berths 302–305	Container Terminal Expansion	N/A			N/A			N/A	
48	Terminal Island	Container Inspection Area	N/A			N/A			N/A	
49	Berths 212–224	Container Terminal Expansion	N/A			N/A			N/A	
50	Port of Long Beach – Pier S	Container Terminal	N/A			N/A			N/A	
	Total				4,962	4,763	9,723	6,780	7,550	14,261

Table 18-9 (Continued)

Project Location	Land Use	Size	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total

KSF = thousand square feet
DU = dwelling units
N/A = not available
Source Data:
Projects 1–8: Project parameters based on city of Carson website data.
Project 9: Project parameters based on Los Angeles County project list.
Projects 10–13: Based on data from Traffic Study for Los Angeles Unified School District South Region High School #15 (KOA Corporation 2008).
Projects 14–19: Weekday data provided by LADOT. In/out splits from "Peak Hour Adjacent Street Traffic," Trip Generation, 7th Edition, ITE.
Projects 20–44: Based on data from San Pedro Waterfront Project and Wilmington Waterfront Project.
Projects 45–50: Based on data from Gerald Desmond Bridge EIR/EIS, Iteris, October 2009.

Trip generation estimates prepared for each construction phase of the alternatives (project) were based on projected staffing and truck activity levels. To provide a conservative analysis, it was assumed that all day-shift construction workers and 10 percent of truck trips at each site would arrive or depart during the peak hours of adjacent street traffic (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.). The projected future baseline traffic volumes at the study intersections prior to construction of the project and the changes related to construction activities in terms of temporary additional vehicular traffic attributable to the project were evaluated to identify potentially adverse impacts. This traffic analysis represents a conservative (i.e., worst-case) scenario in consideration of the upper bounds of impacts likely to be experienced on the street system in the vicinity of each shaft site where construction activities would result in the temporary increase of vehicular traffic.

The following general trip distribution is assumed for construction worker trips to and from the shaft sites, based on the population density of the surrounding area from which workers would be drawn.

- 45 percent to and from the north
- 40 percent to and from the east
- 15 percent to and from the west

The location(s) to which soil excavated during tunnel construction would be transported is unknown at this time. For the purpose of this analysis, it was assumed that it would be transported by truck via I-110, I-710, and other freeways to one or more locations within 150 miles of the working shaft sites.

Analysis was conducted to comply with the Los Angeles County CMP requirements, which present a regional analysis to quantify potential impacts of the project on the regional freeway system serving the project area, including impacts on the I-110 and I-710 segments, CMP freeway monitoring locations, and CMP intersection monitoring stations included in the Los Angeles County CMP road network in the vicinity of the project.

The CMP guidelines indicate that if a proposed development project would add 150 or more trips in either direction during either the morning or evening peak hour to the mainline freeway monitoring location, then a CMP freeway analysis must be conducted. If a project would add 50 or more peak hour trips (of adjacent street traffic) to a CMP arterial intersection, then a CMP arterial intersection analysis must be conducted.

For the purposes of a CMP traffic impact analysis, a project impact is considered to be significant if the project increases traffic demand on a CMP roadway by 2 percent of capacity (V/C greater than 0.02), causing or worsening LOS F (V/C greater than 1.00). Under these criteria, a project would not be considered to have a regionally significant impact if the analyzed roadway is operating at LOS E or better after the addition of project traffic, regardless of the increase in V/C ratio caused by the project. If the roadway is operating at LOS F with project traffic and the incremental change in the V/C ratio caused by the project is 0.02 or greater, the project would be considered to have a significant impact.

18.4.1.1 Baseline

CEQA Baseline

Section 15125 of the California Environmental Quality Act (CEQA) Guidelines requires EIRs to include a description of the physical environmental conditions in the vicinity of a proposed project that exist at the time of the NOP. These environmental conditions would normally constitute the baseline physical conditions by which the CEQA lead agency determines whether an impact is significant (*Sunnyvale West Neighborhood Association v. City of Sunnyvale City Council* (2010) decision). However, a lead agency has discretion not to use an environmental baseline as of the time of the NOP for the analysis of traffic impacts where the agency determines, on the basis of substantial evidence, that future traffic conditions surrounding the proposed project will change regardless of whether the proposed project is approved. Local and regional planning agencies long-term projections, as well as information on specific development projects, support the conclusion that traffic volumes will increase in the study area. The transportation and traffic impact analysis of the Clearwater Program assesses potential impacts against future baseline conditions because the alternatives include detailed schedules for construction and operation of the various elements. The use of future baseline conditions to assess project impacts provides a more conservative analysis of potential project impacts than existing baseline conditions because the estimated future traffic volumes are higher than existing traffic volumes, and the applicable thresholds of significance are based on a sliding scale that is more sensitive under more congested conditions (i.e., conditions with higher traffic volumes). The specific future baseline transportation improvements assumed in this analysis are identified in the relevant programming documents for the city of Los Angeles and the Port of Los Angeles. Transportation improvements that are planned but not funded are not assumed to be in place in the future horizon years. This provides a reasonable basis for estimating the future traffic conditions within which project construction would occur.

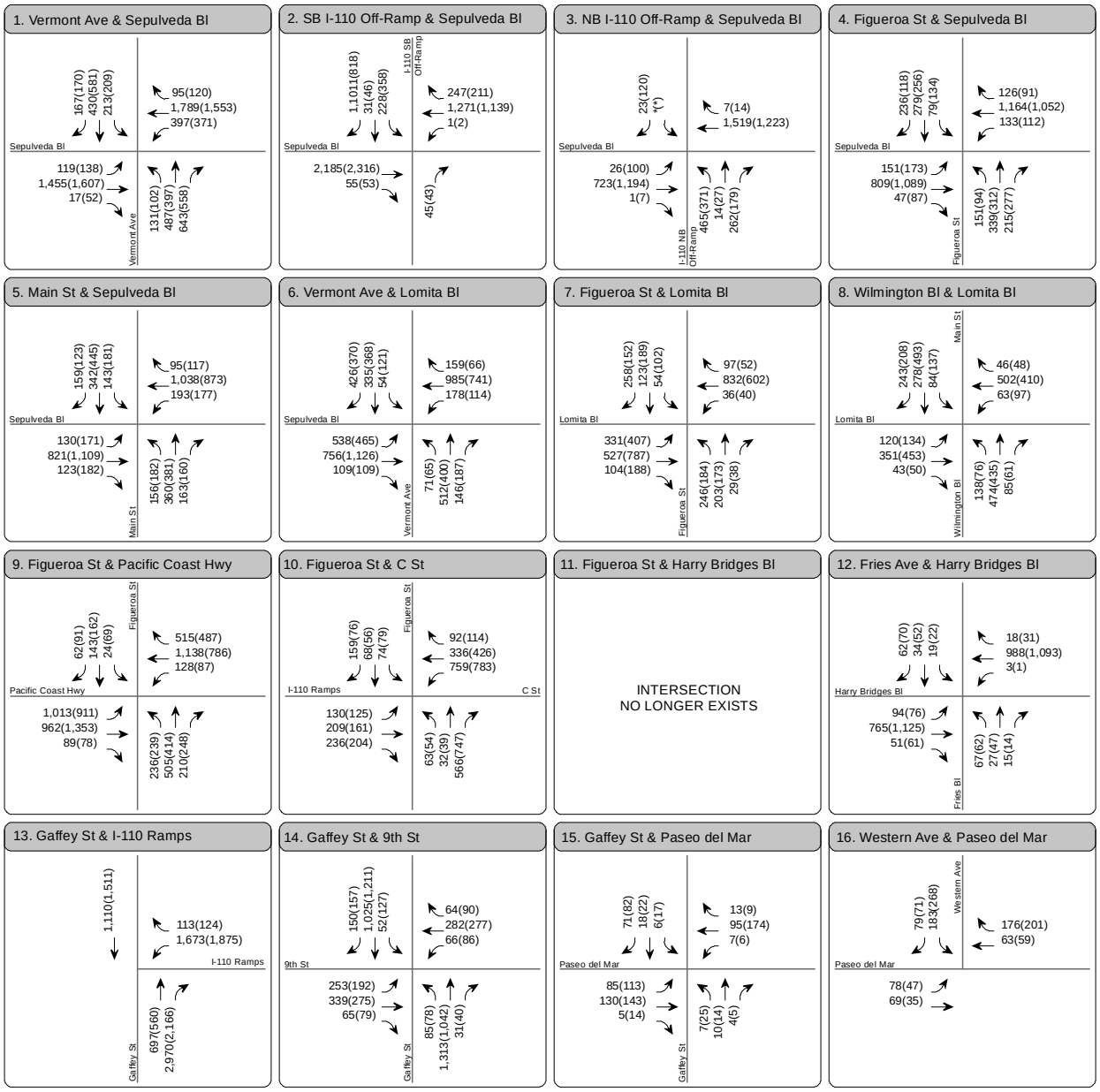
The CEQA baseline (program and project) is the cumulative future traffic conditions that would exist without the development of the alternatives. This baseline is compared against the proposed project conditions for the years identified in the Clearwater Program where construction would be the most intense. For Alternatives 1 and 2 (Project), the year 2017 was used. For Alternatives 3 and 4 (Project), year 2019 was used. The impact using this methodology accounts for the proposed project itself, as well as regional traffic growth, proposed local development projects, and traffic increases resulting from the Port of Los Angeles throughput growth that is not attributable to the proposed project. This method ensures that the growth of background traffic in the future years is not improperly attributed to the project. Although this methodology differs from that used in other resource chapter, it is utilized in this chapter because it provides a realistic and conservative identification and determination of the likely traffic impacts. To develop CEQA baseline conditions for 2017 and 2019, the cumulative base traffic volumes were analyzed using the LOS methodologies described in Section 18.2.3 to project future operating conditions at the study intersections for the weekday AM and PM peak hours. This analysis assumed completion of the related projects described in Table 18-9, as well as regional traffic growth. Figures 18-5 and 18-6 show the projected future traffic volumes at the study intersections in 2017 and in 2019, respectively. The 2017 and 2019 CEQA baseline LOS at the study intersections for Alternatives 1

FIGURE 18-4

Location of Cumulative Development Projects

CLEARWATER Program

Source: Sanitation Districts of Los Angeles County 2011, Fehr & Peers 2010, Thomas Bros. 2011, ESRI 2011



LEGEND

A M(PM) Peak Hour Traffic Volume

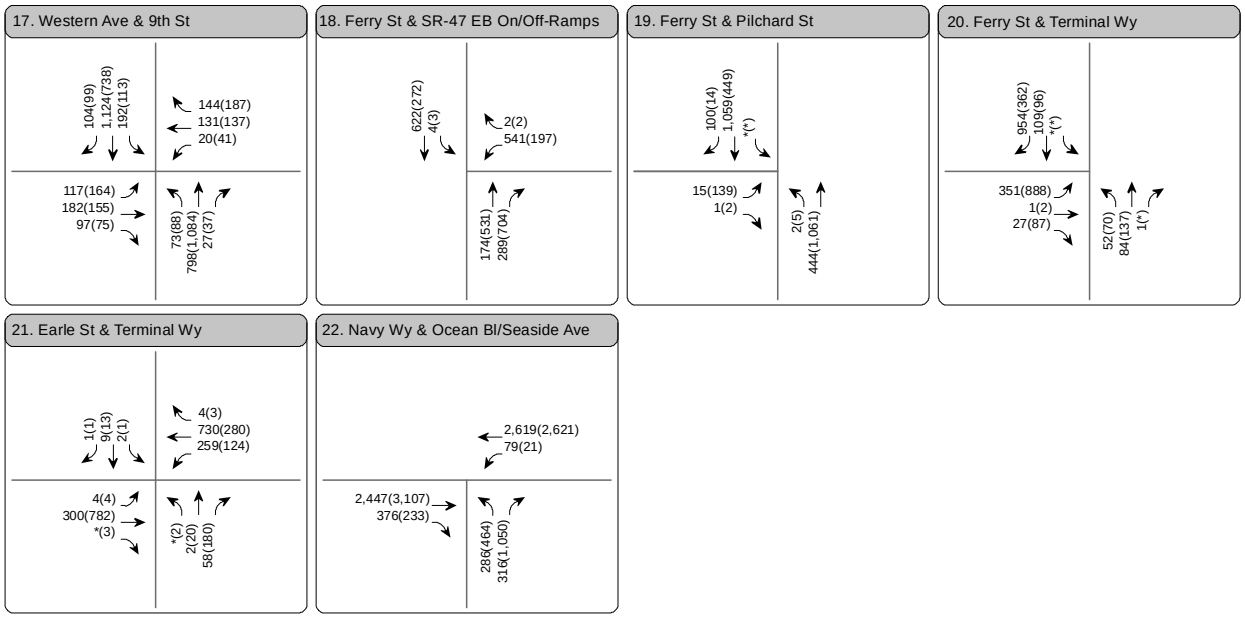
* No Traffic Data

FIGURE 18-5

CLEARWATER Program

Cumulative Base (2017) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010



LEGEND

A M(PM) Peak Hour Traffic Volume

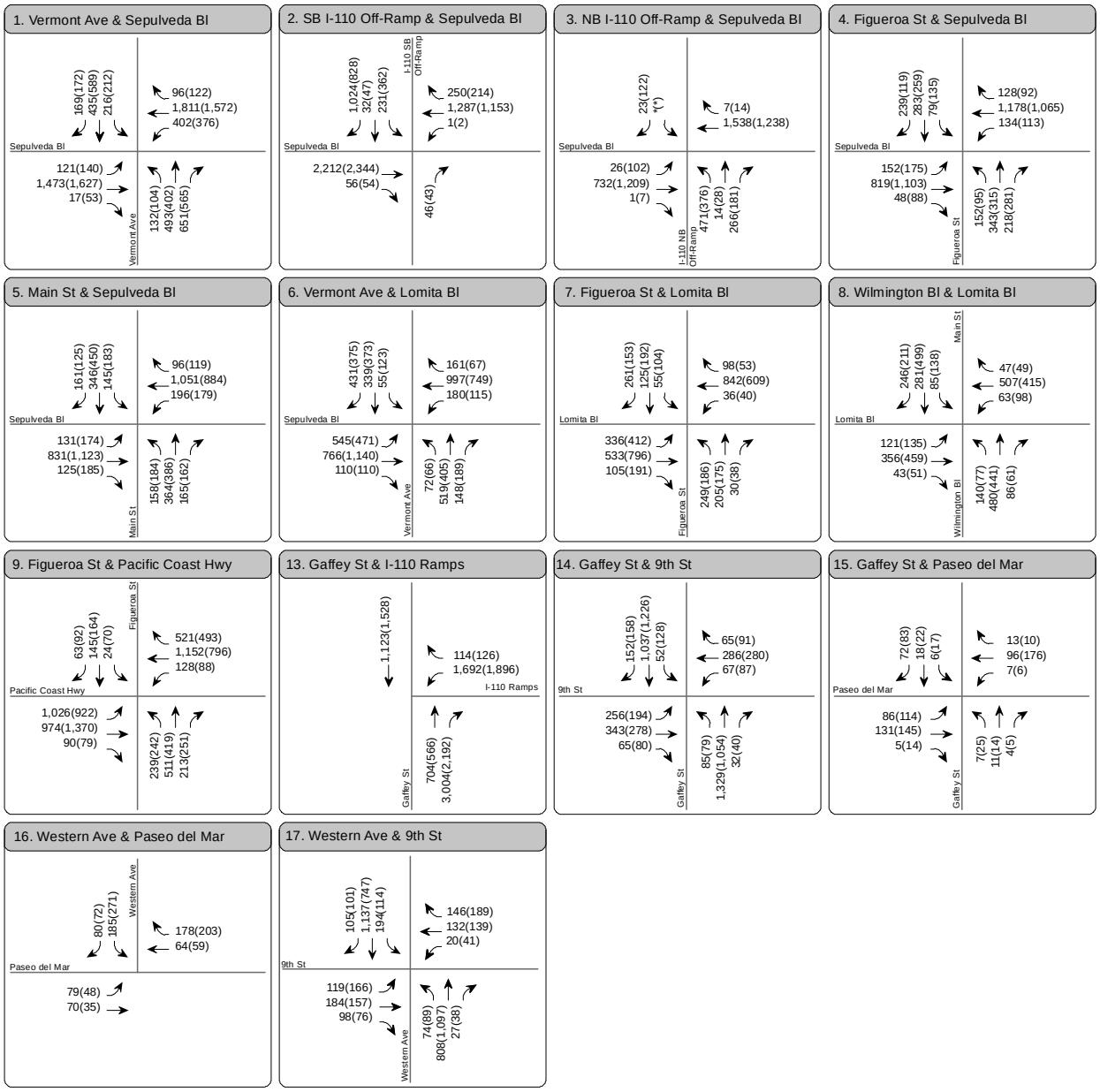
* No Traffic Data

FIGURE 18-5 (continued)

CLEARWATER Program

Cumulative Base (2017) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010



LEGEND

A M(PM) Peak Hour Traffic Volume

* No Traffic Data

FIGURE 18-6

CLEARWATER Program

Cumulative Base (2019) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010

and 2 (Project) and for Alternatives 3 and 4 (Project) are summarized in Table 18-10. As indicated in the table, 18 of the 21 study intersections are projected to operate at LOS D or better during the AM and PM peak hours in 2017, and 10 of the 14 study intersections are projected to operate at LOS D or better during the AM and PM peak hours in 2019. The exceptions are the intersections of Vermont Avenue/ Sepulveda Boulevard, Southbound I-110 Off-Ramp/Sepulveda Boulevard, Vermont Avenue/Lomita Boulevard, and Figueroa Street/Pacific Coast Highway.[1]

Table 18-10. Alternatives (Project) Cumulative Base (2017 and 2019) Intersection Level of Service Analysis

			Existing (Year 2010)		Cumulative Base (Year 2017)		Cumulative Base (Year 2019)	
	Intersection	Peak Hour	V/C or Delay	LOS	V/C or Delay	LOS	V/C or Delay	LOS
Study Intersections in the Vicinity of the JWPCP East and JWPCP West Shaft Sites								
1	Vermont Avenue	AM	0.935	E	0.980	E	0.992	E
	Sepulveda Boulevard	PM	0.925	E	0.969	E	0.981	E
2	SB I-110 Off-Ramp	AM	0.858	D	0.899	D	0.910	E
	Sepulveda Boulevard	PM	0.817	D	0.855	D	0.865	D
3	NB I-110 Off-Ramp	AM	0.712	C	0.739	C	0.746	C
	Sepulveda Boulevard	PM	0.698	B	0.728	C	0.736	C
4	Figueroa Street	AM	0.710	C	0.739	C	0.746	C
	Sepulveda Boulevard	PM	0.725	C	0.759	C	0.766	C
5	Main Street	AM	0.681	B	0.710	C	0.717	C
	Sepulveda Boulevard	PM	0.774	C	0.811	D	0.819	D
6	Vermont Avenue	AM	0.963	E	1.019	F	1.031	F
	Lomita Boulevard	PM	0.799	C	0.847	D	0.858	D
7	Figueroa Street	AM	0.787	C	0.779	C	0.787	C
	Lomita Boulevard	PM	0.654	B	0.716	C	0.724	C
8	Main Street/Wilmington Boulevard	AM	0.956	E	0.560	A	0.564	A
	Lomita Boulevard	PM	0.964	E	0.553	A	0.557	A
9	Figueroa Street	AM	0.929	E	0.945	E	0.958	E
	Pacific Coast Highway[a]	PM	0.862	D	0.875	D	0.887	D
Study Intersections in the Vicinity of the TraPac Shaft Site								
10	Figueroa Street	AM	10.7 sec.	B	0.497	A	Intersection was not analyzed under these alternatives.	
	I-110 Ramps/C Street[a b c]	PM	13.6 sec.	B	0.415	A		
11	Figueroa Street/TraPac Gate	AM	0.379	A	Intersection will not exist in the future.		Intersection was not analyzed under these alternatives.	
	Harry Bridges Boulevard[d]	PM	0.465	A				
12	Fries Avenue	AM	0.313	A	0.471	A	Intersection was not analyzed under these alternatives.	
	Harry Bridges Boulevard[a]	PM	0.403	A	0.571	A		

[1] A supplemental traffic analysis was also completed to determine if impacts would be different using an existing traffic baseline rather than the future baseline. This supplemental traffic analysis is included as Appendix 18-C. This analysis concluded that the impacts compared to existing traffic were consistent with the impacts compared to the future baseline conditions.

Table 18-10 (Continued)

Intersection		Peak Hour	Existing (Year 2010) V/C or Delay	Existing (Year 2010) LOS	Cumulative Base (Year 2017) V/C or Delay	Cumulative Base (Year 2017) LOS	Cumulative Base (Year 2019) V/C or Delay	Cumulative Base (Year 2019) LOS
Study Intersections in the Vicinity of the Angels Gate and Royal Palms Shaft Sites								
13	Gaffey Street	AM	0.488	A	Intersection was not analyzed under these alternatives.		0.551	A
	I-110 Ramps[a]	PM	0.623	B			0.689	B
14	Gaffey Street	AM	0.712	C	Intersection was not analyzed under these alternatives.		0.793	C
	9th Street[a]	PM	0.716	C			0.791	C
15	Gaffey Street	AM	8.5 sec.	A	Intersection was not analyzed under these alternatives.		8.5 sec.	A
	Paseo Del Mar[b]	PM	9.1 sec.	A			9.4 sec.	A
16	Western Avenue	AM	11.1 sec.	B	Intersection was not analyzed under these alternatives.		11.5 sec.	A
	Paseo Del Mar[e]	PM	11.8 sec.	B			12.2 sec.	A
17	Western Avenue	AM	0.543	A	Intersection was not analyzed under these alternatives.		0.564	A
	9th Street[a]	PM	0.569	A			0.593	A
Study Intersections in the Vicinity of the LAXT and Southwest Marine Shaft Sites								
18	Ferry Street	AM	0.476	A	0.324	A	Intersection was not analyzed under these alternatives.	
	SR-47 EB On/Off-Ramps[a]	PM	0.262	A	0.451	A		
19	Ferry Street	AM	0.231	A	0.299	A	Intersection was not analyzed under these alternatives.	
	Pilchard Street[a]	PM	0.357	A	0.347	A		
20	Ferry Street	AM	0.520	A	0.571	A	Intersection was not analyzed under these alternatives.	
	Terminal Way[a]	PM	0.718	C	0.307	A		
21	Earle Street	AM	0.476	A	0.213	A	Intersection was not analyzed under these alternatives.	
	Terminal Way[a]	PM	0.262	A	0.365	A		
22	Navy Way	AM	0.231	A	0.623	B	Intersection was not analyzed under these alternatives.	
	Ocean Boulevard/Seaside Avenue[a]	PM	0.357	A	0.814	D		

[a] Intersection is assumed to be operating under ATSAC and ATCS system in the future. Per LADOT guidelines, a 10 percent capacity credit has been taken at intersections operating with ATSAC/ATCS systems.

[b] Intersection is a four-way stop-controlled intersection. Level of service is based on 2000 HCM four-way stop method. Average delay of the intersection is reported.

[c] Intersection would be reconfigured in the future per the conceptual plan for Harry Bridges Boulevard realignment.

[d] Intersection analyzed under existing conditions only. In the future, intersection would no longer exist per the conceptual plan for Harry Bridges Boulevard realignment.

[e] Intersection is a one-way stop-controlled intersection. Level of service is based on 2000 HCM unsignalized method. Worst approach delay of the intersection is reported.

NEPA No-Federal-Action Baseline

The National Environmental Policy Act (NEPA) no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the condition of resources at the year 2022 when construction of project elements under the United States (U.S.) Army Corps of Engineers' (Corps') jurisdiction would conclude.

The CEQA baseline for transportation and traffic (terrestrial) utilizes projected conditions in the year 2017 for Alternatives 1 and 2, and the year 2019 for Alternatives 3 and 4. The methodology would account for the proposed project itself, as well as regional traffic growth, proposed local development projects, and traffic increases resulting from the Port of Los Angeles throughput growth that is not attributable to the proposed project. The projections for all alternatives at 2017 and 2019 would remain comparable to conditions in the year 2022. Therefore, the NEPA no-federal-action baseline is the same as the CEQA baseline.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

18.4.2 Thresholds of Significance

The project would pose a significant impact if it exceeds any of the following thresholds for terrestrial transportation and traffic (TRT):

TRT-1. Conflicts with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

TRT-2. Conflicts with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways.

TRT-3. Results in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

TRT-4. Substantially increases hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

TRT-5. Results in inadequate emergency access.

TRT-6. Conflicts with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts to terrestrial transportation and traffic before mitigation. Table 18-11 identifies which elements were brought forward for further analysis by threshold

in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 18-11 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 18-11. Thresholds Evaluated

		Threshold					
	Alt.	**TRT-1**	**TRT-2**	**TRT-3**	**TRT-4**	**TRT-5**	**TRT-6**
Program Element							
Conveyance System Improvements	1–5	X	X		X	X	X
SJCWRP Plant Expansion	1–5	X	X		X	X	X
SJCWRP Process Optimization	1–4	X	X		X	X	X
POWRP Process Optimization	1–4	X	X		X	X	X
LCWRP Process Optimization	1–4	X	X		X	X	X
LBWRP Process Optimization	1–4	X	X		X	X	X
JWPCP Solids Processing	1–5	X	X		X	X	X
JWPCP Biosolids Management	1–5	X	X		X	X	X
Project Element							
Wilmington to SP Shelf (onshore tunnel) [a]	1,2	X	X		X	X	X
Wilmington to SP Shelf (offshore tunnel)	1	X	X		X	X	X
Wilmington to PV Shelf (onshore tunnel)[a]	1,2	X	X		X	X	X
Wilmington to PV Shelf (offshore tunnel)	2	X	X		X	X	X
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3	X	X		X	X	X
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3	X	X		X	X	X
Figueroa/Western to Royal Palms (onshore tunnel)	4	X	X		X	X	X
JWPCP East Shaft Site	1,2	X	X		X	X	X
TraPac Shaft Site	1,2	X	X		X	X	X
LAXT Shaft Site	1,2	X	X		X	X	X
Southwest Marine Shaft Site	1,2	X	X		X	X	X
JWPCP West Shaft Site	3,4	X	X		X	X	X
Angels Gate Shaft Site	3	X	X		X	X	X
Royal Palms Shaft Site	4	X	X		X	X	X
SP Shelf Riser/Diffuser Area	1	X	X		X	X	X
PV Shelf Riser/Diffuser Area	2,3	X	X		X	X	X
Existing Ocean Outfalls Riser/Diffuser Area	1–4	X	X		X	X	X

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
Alt. = alternative

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears.

18.4.3 Alternative 1

18.4.3.1 Program

Impact TRT-1. Would Alternative 1 (Program) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Conveyance System – Conveyance Improvements

Construction

The Clearwater Program has identified the need for future conveyance improvements. Implementation of the program-level conveyance improvements could result in impacts on traffic. At this time, however, no specific projects have been proposed. Even so, the Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contracts to minimize any traffic impacts. These standard practices and bid requirements are used on all conveyance system construction projects, whether installing new sewers or rehabilitating existing sewers.

- **Traffic Management/Control Plan.** A construction work site traffic management/control plan is prepared by the contractor and submitted to the responsible local agency for review and approval prior to the start of any construction work.
- **Advance Notice to Affected Parties.** An advance notice is provided to any affected residents, businesses, and property owners in the vicinity of each construction site. Any alternative means of access is identified where existing property access will be reduced.
- **Coordination With Emergency Service and Public Transportation Providers.** Advance notice is provided to emergency service (police, fire, and ambulance) and public transportation providers for any lane closures, detours, construction hours, or changes to local access.
- **Alternative Pedestrian and Bicycle Access Routes Identified.** Where sidewalks, crosswalks, or bike lanes are affected, alternative access routes are identified.

During the construction period, conveyance improvements would be constructed employing jacking/tunneling or open-trench methods, or a combination of the two. If the conveyance improvements were constructed using the jacking/tunneling method, temporary localized adverse impacts could occur in the vicinity of jacking/tunnel-access pits. If conveyance improvements were constructed using open-trench methods, the same types of adverse impacts would be expected, but their geographic extent would be larger, i.e., they would extend along the entire area of open-trench construction in streets and public rights-of-way. Effects could involve the temporary closure of travel and/or parking lanes, temporary closure of bicycle lanes and sidewalks, temporary relocation of bus stops, and limitations on local access. Because the precise location of the planned conveyance improvements and the appropriate construction techniques are not known at this time, the specific location of these potential impacts cannot be determined. The construction would result in the temporary addition of worker trips and truck trips (material delivery and removal of excavated soil) to the surrounding regional and local transportation system. Preliminary estimates show the need for approximately five truck trips per day and approximately five construction workers at any work site. The lane closures required for construction of

the conveyance system would temporarily reduce roadway capacity, but with the Sanitation Districts implementing the standard practices and bid requirements used on all conveyance system construction projects, construction-related traffic effects are considered to be less than significant.

Operation

Because the conveyance system is located underground, neither temporary lane closures nor additional trips are anticipated during the operation of the conveyance system; therefore, there would be no impacts.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Construction of the plant expansion would result in the temporary addition of worker trips and truck trips to and from the SJCWRP to the surrounding regional and local transportation system. Preliminary estimates show the need for approximately 30 workers to complete construction. It is anticipated that construction for this program element would last between 2 and 3 years and would be completed by approximately 2050. Implementation of Mitigation Measure (MM) TRT-1 would reduce the impacts from these additional trips to less than significant.

Operation

During regular operation of the SJCWRP, the permanent staff is not anticipated to increase appreciably; therefore, few, if any, additional trips are anticipated. Therefore, there would be no impacts.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

Construction for process optimization would result in the temporary addition of worker trips and truck trips to and from each WRP to the surrounding regional and local transportation system. Preliminary estimates show the need for approximately 30 workers to complete construction at each WRP. It is anticipated that construction for these program elements would last between 2 and 3 years and would be completed between 2018 and 2028. Implementation of MM TRT-1 would reduce the impacts from these additional trips to less than significant.

Operation

During regular operation of each WRP, the permanent staff is not anticipated to increase appreciably; therefore, few, if any, additional trips are anticipated. Therefore, there would be no impacts.

Joint Water Pollution Control Plant – Solids Processing

Construction

Construction for solids processing would result in the temporary addition of worker trips and truck trips to and from the JWPCP to the surrounding regional and local transportation system. Preliminary assumptions anticipate the need for approximately 50 one-way truck trips per day for excavation and

hauling to complete construction. It is anticipated that construction for this element would be completed by approximately 2040. Implementation of MM TRT-1 would reduce the impacts from these additional trips to less than significant.

Operation

During the operation of these solids processing facilities, no additional trips to the surrounding roadway network are anticipated. Therefore, there would be no impacts.

Joint Water Pollution Control Plant – Biosolids Management

Operation

In the operational phase, additional biosolids management would be expected to generate approximately 20 additional truck loads (40 additional one-way truck trips) per day as a result of this program element. As stated in Section 2.2.4.3, the current peak period for trucks transporting biosolids from the JWPCP occurs from 5:00 a.m. to 2:00 p.m. Assuming that the additional trips would also occur during this 9-hour peak period, this would result in approximately two to three inbound and two to three outbound truck trips per hour. At this level of increase, the impact of these additional trips on the surrounding regional and local transportation system would be less than significant.

CEQA Impact Determination

Construction of plant expansion at the SJCWRP; process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; and solids processing facilities at the JWPCP for Alternative 1 (Program) would conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Impacts would be significant before mitigation. Operation of Alternative 1 (Program) would result in less than significant impacts.

Mitigation

MM TRT-1. Prepare and implement a construction traffic management plan. The plan will be submitted to the appropriate local agency for review and approval prior to the start of any construction work. This plan will include such elements as the project schedule, the designation of haul routes for construction-related trucks, the location of access to the construction site, designated staging and parking areas for workers and equipment, any driveway turning movement restrictions, any temporary traffic control devices or flagmen, and any travel time restrictions for construction-related traffic to avoid peak travel periods on selected roadways.

Residual Impacts

Residual impacts would be less than significant.

Impact TRT-2. Would Alternative 1 (Program) conflict with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways?

Conveyance System – Conveyance Improvements

Construction

The CMP impact methodology described in Section 18.4.1 includes a minimum threshold for CMP impact analysis of 150 or more one-way peak hour trips at a mainline freeway monitoring station or 50 or more peak hour trips at a CMP arterial monitoring intersection. It is anticipated that the amount of construction-related one-way peak hour trips would be less than the minimum threshold. In addition, construction-related trips would be, by their nature, of limited duration. Based on these considerations, construction-related traffic impacts would be less than significant.

Operation

No additional trips are anticipated to occur during the operation phase of this program element. Therefore, there would be no impacts.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

The CMP impact methodology described in Section 18.4.1 includes a minimum threshold for CMP impact analysis of 150 or more one-way peak hour trips at a mainline freeway monitoring station or 50 or more peak hour trips at a CMP arterial monitoring intersection. It is anticipated that the amount of construction-related one-way peak hour trips would be less than the minimum threshold. In addition, construction-related trips would be, by their nature, of limited duration. Based on these considerations, construction-related traffic impacts would be less than significant.

Operation

No additional trips are anticipated to occur during the operation phase of this program element. Therefore, there would be no impacts.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

The CMP impact methodology described in Section 18.4.1 includes a minimum threshold for CMP impact analysis of 150 or more one-way peak hour trips at a mainline freeway monitoring station or 50 or more peak hour trips at a CMP arterial monitoring intersection. It is anticipated that the amount of construction-related one-way peak hour trips would be less than the minimum threshold. In addition, construction-related trips would be, by their nature, of limited duration. Based on these considerations, construction-related traffic impacts would be less than significant.

Operation

No additional trips are anticipated to occur during the operation phase of this program element. Therefore, there would be no impacts.

Joint Water Pollution Control Plant – Solids Processing

Construction

The CMP impact methodology described in Section 18.4.1 includes a minimum threshold for CMP impact analysis of 150 or more one-way peak hour trips at a mainline freeway monitoring station or 50 or more peak hour trips at a CMP arterial monitoring intersection. It is anticipated that the amount of construction-related one-way peak hour trips would be less than the minimum threshold. In addition, construction-related trips would be, by their nature, of limited duration. Based on these considerations, construction-related traffic impacts would be less than significant.

Operation

No additional trips are anticipated to occur during the operation phase of this program element. Therefore, there would be no impacts.

Joint Water Pollution Control Plant – Biosolids Management

Operation

The CMP impact methodology described in Section 18.4.1 includes a minimum threshold for CMP impact analysis of 150 or more one-way peak hour trips at a mainline freeway monitoring station or 50 or more peak hour trips at a CMP arterial monitoring intersection. The projected increase in truck trips associated with this program element would be between two to three inbound and two to three outbound trips in the AM peak hour. Therefore, this impact would be less than significant.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not conflict with an applicable congestion management program, including but not limited to LOS standards established by the county congestion management agency for designated roads or highways. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact TRT-4. Would Alternative 1 (Program) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Conveyance System – Conveyance Improvements

Construction

During the construction period, conveyance improvements would be constructed employing jacking/tunneling or open-trench methods, or a combination of the two. If the conveyance improvements were constructed using the jacking/tunneling method, temporary localized adverse impacts could occur in the vicinity of jacking/tunnel-access pits. If conveyance improvements were constructed using open-trench methods, the same types of adverse impacts would be expected, but their geographic extent would be larger, i.e., they would extend along the entire area of open-trench construction in streets and public rights-of-way. Effects could involve the temporary closure of travel and/or parking lanes, temporary closure of bicycle lanes and sidewalks, temporary relocation of bus stops, and limitations on local access. Because the precise location of the planned conveyance improvements and the appropriate construction techniques are not known at this time, the specific location of these potential effects cannot be determined. However, with the Sanitation Districts implementing the standard practices and bid requirements used on all conveyance system construction projects, construction-related traffic impacts would be less than significant.

Operation

Because the conveyance system is located underground, there would be no impacts.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Because all construction activities would be located on site at the SJCWRP, no changes to the existing roadway network or any public right-of-way would occur. Therefore, there would be no impacts.

Operation

Because all operation and maintenance activities would be located on site at the SJCWRP, no changes to the existing roadway network or any public right-of-way would occur. Therefore, there would be no impacts.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

Because all activities in the construction phase of this program element would be located on site at each WRP, no changes to the existing roadway network or any public right-of-way would occur. Therefore, there would be no impacts.

Operation

Because all activities in the operation phase of this program element would be located on site at each WRP, no changes to the existing roadway network or any public right-of-way would occur. Therefore, there would be no impacts.

Joint Water Pollution Control Plant – Solids Processing

Construction

Because all activities in the construction phase of this program element would be located on site at the JWPCP, no changes to the existing roadway network or any public right-of-way would occur. Therefore, there would be no impacts.

Operation

Because all activities in the operation phase of this program element would be located on site at the JWPCP, no changes to the existing roadway network or any public right-of-way would occur. Therefore, there would be no impacts.

Joint Water Pollution Control Plant – Biosolids Management

Operation

No new hazards due to design features would be created by the new biosolids truck trips because trucks would use existing roadways to travel between the JWPCP and the receiving facilities. Therefore, there would be no impacts.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact TRT-5. Would Alternative 1 (Program) result in inadequate emergency access?

Conveyance System – Conveyance Improvements

Construction

During the construction period, conveyance improvements would be constructed employing jacking/tunneling or open-trench methods, or a combination of the two. If the conveyance improvements were constructed using the jacking/tunneling method, temporary localized adverse impacts could occur in the vicinity of jacking/tunnel-access pits. If conveyance improvements were constructed using

open-trench methods, the same types of adverse impacts would be expected, but their geographic extent would be larger, i.e., they would extend along the entire area of open-trench construction in streets and public rights-of-way. Effects could involve the temporary closure of travel and/or parking lanes, temporary closure of bicycle lanes and sidewalks, temporary relocation of bus stops, and limitations on local access. Because the precise location of the planned conveyance improvements and the appropriate construction techniques are not known at this time, the specific location of these potential effects cannot be determined. However, with the Sanitation Districts implementing the standard practices and bid requirements used on all conveyance system construction projects, including giving advance notice to emergency service provides for any lane closures, detours, construction hours, or changes to local access, construction-related traffic impacts would be less than significant.

Operation

Because all activities in the operation phase of this program element would be located underground, emergency access would not be affected. Therefore, there would be no impacts.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Because all activities in the construction phase of this program element would be located on site at the SJCWRP, emergency access would not be affected. Therefore, there would be no impacts.

Operation

Because all activities in the operation phase of this program element would be located on site at the SJCWRP, emergency access would not be affected. Therefore, there would be no impact.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

Because all activities in the construction phase for these program elements would be located on site at each WRP, emergency access would not be affected. Therefore, there would be no impacts.

Operation

Because all activities in the operation phase for these program elements would be located on site at each WRP, emergency access would not be affected. Therefore, there would be no impacts.

Joint Water Pollution Control Plant – Solids Processing

Construction

Because all activities in the construction phase of this program element would be located on site at the JWPCP, emergency access would not be affected. Therefore, there would be no impacts.

Operation

Because all activities in the operation phase of this program element would be located on site at the JWPCP, emergency access would not be affected. Therefore, there would be no impacts.

Joint Water Pollution Control Plant – Biosolids Management

Operation

Inadequate emergency access would not be created by the new biosolids truck trips because trucks would use existing roadways to travel between the JWPCP and the receiving facilities. Therefore, there would be no impacts.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not result in inadequate emergency access. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact TRT-6. Would Alternative 1 (Program) conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities?

Conveyance System – Conveyance Improvements

Construction

During the construction period, conveyance improvements would be constructed employing jacking/tunneling or open-trench methods, or a combination of the two. If the conveyance improvements were constructed using the jacking/tunneling method, temporary localized adverse impacts could occur in the vicinity of jacking/tunnel-access pits. If conveyance improvements were constructed using open-trench methods, the same types of adverse impacts would be expected, but their geographic extent would be larger, i.e., they would extend along the entire area of open-trench construction in streets and public rights-of-way. Effects could involve the temporary closure of travel and/or parking lanes, temporary closure of bicycle lanes and sidewalks, temporary relocation of bus stops, and limitations on local access. Because the precise location of the planned conveyance improvements and the appropriate construction techniques are not known at this time, the specific location of these potential effects cannot be determined. Where these effects would occur, increased safety risks for vehicles, bicyclists, and pedestrians could result from construction activities within or adjacent to streets. However, with the Sanitation Districts implementing the standard practices and bid requirements used on all conveyance system construction projects, construction-related traffic impacts would be less than significant.

Operation

Because all activities in the operation phase of this program element would be located underground, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

San Jose Creek Water Reclamation Plant – Plant Expansion

Construction

Because all activities in the construction phase of this program element would be located on site at the SJCWRP, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

Operation

Because all activities in the operation phase of this program element would be located on site at the SJCWRP, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

San Jose Creek Water Reclamation Plant, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

Because all activities in the construction phase for these program elements would be located on site at each WRP, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

Operation

Because all activities in the operation phase for these elements would be located on site for each WRP, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

Joint Water Pollution Control Plant – Solids Processing

Construction

Because all activities in the construction phase of this program element would be located on site at the JWPCP, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

Operation

Because all activities in the operation phase of this program element would be located on site at the JWPCP, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

Joint Water Pollution Control Plant – Biosolids Management

Operation

No new impacts on public transit, bikeways, or pedestrian facilities would be created by the new biosolids trucks using existing roadways to travel between the JWPCP and the receiving facilities. Therefore, there would be no impacts.

CEQA Impact Determination

Construction and operation of Alternative 1 (Program) would not conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance of safety of such facilities. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

18.4.3.2 Project

Impact TRT-1. Would Alternative 1 (Project) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Site – JWPCP East

Construction

CEQA Analysis

Assumptions made to determine future 2017 baseline conditions for this shaft site are summarized in Section 18.4.1. The location of the study intersections for Alternative 1 (Project) are shown on Figure 18-7, and LOS calculations for study intersections surrounding this shaft site are presented in Table 18-10. As indicated in the table, six of the nine study intersections surrounding the JWPCP East shaft site are projected to operate at LOS D or better during the AM and PM peak hours under 2017 baseline conditions. The exceptions are Sepulveda Boulevard/Vermont Avenue (AM and PM peak hours), Lomita Boulevard/Vermont Avenue (AM peak hour), and Pacific Coast Highway/Figueroa Street (AM peak hour), which are shown on Figure 18-7 as intersections 1, 6, and 9.

During the various construction phases, hauling of supplies and disposal of excavated soil by truck and travel by construction workers and employees would generate traffic over the surrounding regional and local transportation system. The construction-related traffic impact analysis was based on the most intense period (worst-case scenario) of construction between 2014 and 2021. Peak construction activity would occur during the first quarter of 2017. During construction of this shaft site, which would last approximately 10 to 12 months, 20 worker and 260 PCE truck trips (10 inbound worker, 10 outbound

FIGURE 18-7

CLEARWATER Program

Analyzed Intersections Alternatives 1 and 2 (Project)

Source: Sanitation Districts of Los Angeles County 2011, Fehr & Peers 2010, Thomas Bros. 2011, ESRI 2011

worker, 130 inbound PCE truck, 130 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 26 peak hour PCE truck trips (10 inbound worker, 12 inbound PCE truck, and 14 outbound PCE truck in the AM peak hour, and 10 PM outbound worker, 12 inbound PCE truck, and 14 outbound PCE truck in the PM peak hour). During onshore tunnel construction, which would last approximately 24 months, 240 worker and 444 PCE truck trips (120 inbound worker, 120 outbound worker, 222 inbound PCE truck, 222 outbound PCE truck) are estimated per day, including 80 worker and 44 PCE truck trips (40 inbound worker, 40 outbound worker, 20 inbound PCE truck, 24 outbound PCE truck) during the AM and PM peak hours. During decommissioning of this shaft site, which would last approximately 2 to 5 months, 20 worker and 40 PCE truck trips (10 inbound worker, 10 outbound worker, 20 inbound PCE truck, 20 outbound PCE truck) are estimated per day, including 10 peak hour worker and 4 peak hour PCE truck trips (10 inbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the AM peak hour, and 10 PM outbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the PM peak hour). Trip generation used for this analysis is summarized in Table 18-12 through Table 18-15.

Table 18-12. Alternatives 1 and 2 (Project) Construction Truck PCE Trip Generation Estimates by Location and Phase Assuming Maximum Truck Trips

Site and Phase	Duration (Months)	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
JWPCP East Shaft								
Shaft Construction	10–12	260[a]	12	14	26	12	14	26
Onshore Tunneling	24[b]	444[c]	20	24	44	20	24	44
Shaft Covering and Site Restoration	2–5	40	2	2	4	2	2	4
TraPac Shaft								
Shaft Construction	10–11	260[d]	12	14	26	12	14	26
Shaft Site Use	15	8[e]	2	2	4	2	2	4
Shaft Covering and Site Restoration	3	120[f]	6	6	12	6	6	12
LAXT Shaft								
Shaft Construction	12–15	260[g]	12	14	26	12	14	26
Onshore Tunneling	24[b]	444[c]	20	24	44	20	24	44
Offshore Tunneling	78[h]	564[i]	28	30	58	28	30	58
Shaft Covering and Site Restoration	2–5	40	2	2	4	2	2	4
Southwest Marine Shaft								
Shaft Construction	10–11	260[d]	12	14	26	12	14	26
Shaft Site Use	38–60	8[e]	2	2	4	2	2	4
Shaft Covering and Site Restoration	3	120[f]	6	6	12	6	6	12
Riser and Diffuser Construction[j]	36	32	2	2	4	2	2	4
Existing Ocean Outfalls Rehabilitation	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A

PCE factor of 2.0 has been applied to these truck trips for traffic impact analysis.

[a] Estimated 65 truck round trips (130 total one-way) per day during shaft construction, which would last for 10 to 12 months.

[b] Assumed onshore tunneling rate of 10,700 feet at 35 feet per day and 30 working days per month.

[c] Number of truck trips for maximum production during onshore tunneling (up to 95 round trips for excavated material disposal and 16 round-trip deliveries; average activity is estimated to be 48 round trips for excavated material disposal and 9 round-trip deliveries).

[d] Estimated 65 truck round trips (130 total one-way) per day during shaft construction, which would last for 10 to 11 months.

[e] Estimated 2 truck round trips (4 total one-way) per day during tunnel construction, which would last for approximately 12 months.

[f] Number of truck trips for most intensive site restoration. Actual range of truck trips varies between 10 and 30 trips.

[g] Estimated 65 truck round trips (130 total one-way) per day during shaft construction, which would last for 12 to 15 months.

Table 18-12 (Continued)

Site and Phase	Duration (Months)	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total

[h] Assumed offshore tunneling rate of up to 65,200 feet at 40 feet per day and 30 working days per month to the SP Shelf. To the PV Shelf, the offshore pipeline length is 38,100 feet.

[i] Number of truck trips for maximum production during offshore tunneling (up to 123 round trips for excavated material disposal and 18 round-trip deliveries; average activity is estimated to be 62 round trips for excavated material disposal and 10 round-trip deliveries).

[j] Estimates for construction phase only. It is assumed that activity during pre-assembly and demobilization phases would be of similar intensity.

Source: Truck and worker trip estimates are based on information in the JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) and additional information.

Table 18-13. Alternatives 1 and 2 (Project) Construction Worker Trip Generation Estimates by Location and Phase Assuming Maximum Worker Trips

Site and Phase	Duration (Months)	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
JWPCP East Shaft								
Shaft Construction	10–12	20[a]	10	0	10	0	10	10
Onshore Tunneling	24[b]	240[c]	40	40	80	40	40	80
Shaft Covering and Site Restoration	2–5	20[d]	10	0	10	0	10	10
TraPac Shaft								
Shaft Construction	10–11	20[a]	10	0	10	0	10	10
Shaft Site Use	15	80[e]	40	0	40	0	40	40
Shaft Covering and Site Restoration	3	20[d]	10	0	10	0	10	10
LAXT Shaft								
Shaft Construction	12–15	20[a]	10	0	10	0	10	10
Onshore Tunneling	24[b]	240[c]	40	40	80	40	40	80
Offshore Tunneling	78[f]	240[c]	40	40	80	40	40	80
Shaft Covering and Site Restoration	2–5	20[d]	10	0	10	0	10	10
Southwest Marine Shaft								
Shaft Construction	10–11	20[a]	10	0	10	0	10	10
Shaft Site Use	38–60	80[e]	40	0	40	0	40	40
Shaft Covering and Site Restoration	3	20[d]	10	0	10	0	10	10
Riser and Diffuser Construction[i]	36	30[g]	15	0	15	0	15	15
Existing Ocean Outfalls Rehabilitation	9	20[h]	10	0	10	0	10	10

[a] Assumed a 10-hour work shift, 5 days per week. Approximately 10 workers would be needed to construct each shaft.

[b] Assumed onshore tunneling rate of 10,700 feet at 35 feet per day and 30 working days per month.

[c] 35–40 workers needed during tunnel construction, with shift changes occurring in the peak hour. A maximum assumption of 40 workers was used for 3- to 8-hour shifts.

[d] Assumed a 10-hour work shift, 5 days per week. Approximately 10 workers would be needed to decommission each shaft.

[e] Assumed a 10-hour work shift, 5 days per week. Approximately 35–40 workers would be needed for tunnel construction at access shafts.

[f] Assumed offshore tunneling rate of up to 65,200 feet at 40 feet per day and 30 working days per month to the SP Shelf. To the PV Shelf, the offshore pipeline length is 38,100 feet.

[g] Assumed a 10-hour work shift, 5 days per week. Approximately 15 workers would be needed to construct the riser and diffuser.

[h] Assumed a 10-hour work shift, 5 days per week. Approximately 8–10 workers would be needed for existing ocean outfalls rehabilitation.

[i] Estimates for construction phase only. It is assumed that activity during pre-assembly and demobilization phases would be of similar intensity.

Table 18-13 (Continued)

Site and Phase	Duration (Months)	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Source: Truck and worker trip estimates are based on information in the JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) and additional information.								

Table 18-14. Alternatives 1 and 2 (Project) Total PCE Construction Trip Generation Estimates by Location and Phase Assuming Maximum Truck and Worker Trips

Site and Phase	Duration (Months)	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
JWPCP East Shaft								
Shaft Construction	10–12	280	22	14	36	12	24	36
Onshore Tunneling	24[a]	684	60	64	124	60	64	124
Shaft Covering and Site Restoration	2–5	60	12	2	14	2	12	14
TraPac Shaft								
Shaft Construction	10–11	280	22	14	36	12	24	36
Shaft Site Use	15	88	42	2	44	2	42	44
Shaft Covering and Site Restoration	3	140	16	6	22	6	16	22
LAXT Shaft								
Shaft Construction	12–15	280	22	14	36	12	24	36
Onshore Tunneling	24[a]	684	60	64	124	60	64	124
Offshore Tunneling	78[b]	804	68	70	138	68	70	138
Shaft Covering and Site Restoration	2–5	60	12	2	14	2	12	14
Southwest Marine Shaft								
Shaft Construction	10–11	280	22	14	36	12	24	36
Shaft Site Use	38–60	88	42	2	44	2	42	44
Shaft Covering and Site Restoration	3	140	16	6	22	6	16	22
Riser and Diffuser Construction[c]	36	62	17	2	19	2	17	19
Existing Ocean Outfalls Rehabilitation	9	20	10	0	10	0	10	10

PCE factor of 2.0 has been applied to these truck trips for traffic impact analysis.

[a] Assumed onshore tunneling rate of 10,700 feet at 35 feet per day and 30 working days per month.

[b] 35–40 workers needed during tunnel construction, with shift changes occurring in the peak hour. A maximum assumption of 40 workers was used for 3- to 8-hour shifts.

[c] Estimates for construction phase only. It is assumed that activity during pre-assembly and demobilization phases would be of similar intensity.

Source: Truck and worker trip estimates are based on information in the JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) and additional information.

Table 18-15. Alternatives 1 and 2 (Project) Total PCE Peak Hour Construction Trip Generation per Phase per Quarter Assuming Maximum Truck and Worker Trips

	2015				2016				2017				2018				2019				2020				2021				2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Submittals and TBM Fabrication																																
JWPCP East Shaft Construction	36	36	36	36																												
Site Preparation/Assemble TBM 1																																
Tunneling (TBM 1 Onshore)[a]							124	124	124	124	124	124	124	124																		
TraPac Shaft Construction						36	36	36	36																							
TraPac Shaft Use										44	44	44	44	44																		
LAXT Shaft Construction	36	36	36	36	36																											
Site Preparation/Assemble TBM 2																																
Tunneling (TBM 2 Onshore)[a]							124	124	124	124	124	124	124	124																		
Tunneling (TBM 2 Offshore)							138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138
Southwest Marine Shaft Construction			36	36	36	36																										
Southwest Marine Shaft Use							44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
SP Shelf Riser Construction																				19	19	19	19	19	19	19	19					
SP Shelf Diffuser Construction																												19	19	19	19	
Existing Ocean Outfalls Rehabilitation																												10	10	10		
Demobilization																																
Total Trips per Quarter Alternative 1	72	72	108	108	72	72	342	342	342	350	350	350	**350**	**350**	182	182	182	182	182	201	201	201	201	201	201	201	63	73	73	73	63	44
Total Trips per Quarter Alternative 2	72	72	108	108	72	72	342	342	342	350	350	350	**350**	**350**	182	182	182	182	182	201	201	201	201	201	201	201	201	211	211	211	201	182

Offshore tunnel construction for Alternative 1 (Project) would last approximately 18 months longer than offshore tunnel construction for Alternative 2 (Project). This table reflects the longer offshore tunnel construction for Alternative 1 (Project).

[a] The onshore segment of this tunnel alignment would be constructed from either JWPCP East or LAXT, but not both. In order to assess a maximum localized potential impact that could occur under Alternatives 1 and 2 (Project), the intersection LOS analysis assumed the use of three tunnel boring machines (TBMs). The totals shown in this summary table, however, reflect the use of two TBMs.

Construction worker trips for this shaft site were distributed onto the surrounding street network based on the general distribution described in Section 18.4.1. Truck trips were assumed to travel on Figueroa Street and Sepulveda Boulevard to access I-110. The maximum estimated peak hour trips at the study intersections to and from this shaft site during construction is shown on Figure 18-8. The total projected peak hour traffic volumes at the study intersections are shown on Figure 18-9. Future 2017 LOS conditions during the construction period and an assessment of potential temporary adverse impacts are presented in Table 18-16.

Table 18-16. Alternatives 1 and 2 (Project) Future (2017) Intersection Level of Service Analysis and Impact Determination

			Cumulative Baseline 2017		Cumulative Plus Alternatives 1 and 2 (Project) 2017			
Intersection		Peak Hour	V/C or Delay	LOS	V/C or Delay	LOS	Project Increase in V/C	Adverse Project Impact
Study Intersections in the Vicinity of the JWPCP East Shaft Site								
1	Vermont Avenue	AM	0.980	E	0.980	E	0.000	No
	Sepulveda Boulevard	PM	0.969	E	0.969	E	0.000	No
2	SB I-110 Off-Ramp	AM	0.899	D	0.899	D	0.000	No
	Sepulveda Boulevard	PM	0.855	D	0.856	D	0.001	No
3	NB I-110 Off-Ramp	AM	0.739	C	0.749	C	0.010	No
	Sepulveda Boulevard	PM	0.728	C	0.738	C	0.010	No
4	Figueroa Street	AM	0.739	C	0.770	C	0.031	No
	Sepulveda Boulevard	PM	0.759	C	0.761	C	0.002	No
5	Main Street	AM	0.710	C	0.712	C	0.002	No
	Sepulveda Boulevard	PM	0.811	D	0.812	D	0.001	No
6	Vermont Avenue	AM	1.019	F	1.020	F	0.001	No
	Lomita Boulevard	PM	0.847	D	0.848	D	0.001	No
7	Figueroa Street	AM	0.779	C	0.782	C	0.003	No
	Lomita Boulevard	PM	0.716	C	0.721	C	0.005	No
8	Main Street/ Wilmington Boulevard	AM	0.560	A	0.561	A	0.001	No
	Lomita Boulevard	PM	0.553	A	0.554	A	0.001	No
9	Figueroa Street	AM	0.945	E	0.952	E	0.007	No
	Pacific Coast Highway[a]	PM	0.875	D	0.879	D	0.004	No
Study Intersections in the Vicinity of the TraPac Shaft Site								
10	Figueroa Street	AM	0.497	A	0.503	A	0.006	No
	I-110 Ramps/C Street[a b c]	PM	0.415	A	0.419	A	0.004	No
11	Figueroa Street/TraPac Gate	AM	Intersection will not exist in the future.		Intersection will not exist in the future.		N/A	N/A
	Harry Bridges Boulevard[d]	PM					N/A	N/A
12	Fries Avenue	AM	0.471	A	0.471	A	0.000	No
	Harry Bridges Boulevard[a]	PM	0.571	A	0.575	A	0.004	No

Table 18-16 (Continued)

Intersection		Peak Hour	Cumulative Baseline 2017 V/C or Delay	Cumulative Baseline 2017 LOS	Cumulative Plus Alternatives 1 and 2 (Project) 2017 V/C or Delay	Cumulative Plus Alternatives 1 and 2 (Project) 2017 LOS	Project Increase in V/C	Adverse Project Impact
Study Intersections in the Vicinity of the LAXT and Southwest Marine Shaft Sites								
18	Ferry Street	AM	0.324	A	0.362	A	0.038	No
	SR-47 EB On/Off-Ramps[a]	PM	0.451	A	0.502	A	0.051	No
19	Ferry Street	AM	0.299	A	0.307	A	0.008	No
	Pilchard Street[a]	PM	0.347	A	0.364	A	0.017	No
20	Ferry Street	AM	0.571	A	0.599	A	0.028	No
	Terminal Way[a]	PM	0.307	A	0.316	A	0.009	No
21	Earle Street	AM	0.213	A	0.213	A	0.000	No
	Terminal Way[a]	PM	0.365	A	0.379	A	0.014	No
22	Navy Way	AM	0.623	B	0.633	B	0.010	No
	Ocean Boulevard/ Seaside Avenue[a]	PM	0.814	D	0.825	D	0.011	No

[a] Intersection is assumed to be operating under ATSAC and ATCS system in the future. Per LADOT guidelines, a 10 percent capacity credit has been taken at intersections operating with ATSAC/ATCS systems.

[b] Intersection is a four-way stop-controlled intersection. LOS is based on 2000 HCM four-way stop method. Average delay of the intersection is reported.

[c] Intersection would be reconfigured in the future per the conceptual plan for Harry Bridges Boulevard realignment.

[d] Intersection was analyzed under existing conditions only. In the future, intersection would no longer exist per the conceptual plan for Harry Bridges Boulevard realignment.

[e] Intersection is a one-way stop-controlled intersection. LOS is based on 2000 HCM unsignalized method. Worst approach delay of the intersection is reported.

Based on this analysis, the additional construction-related traffic associated with the JWPCP East shaft site would not significantly affect the nine study intersections in its vicinity. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

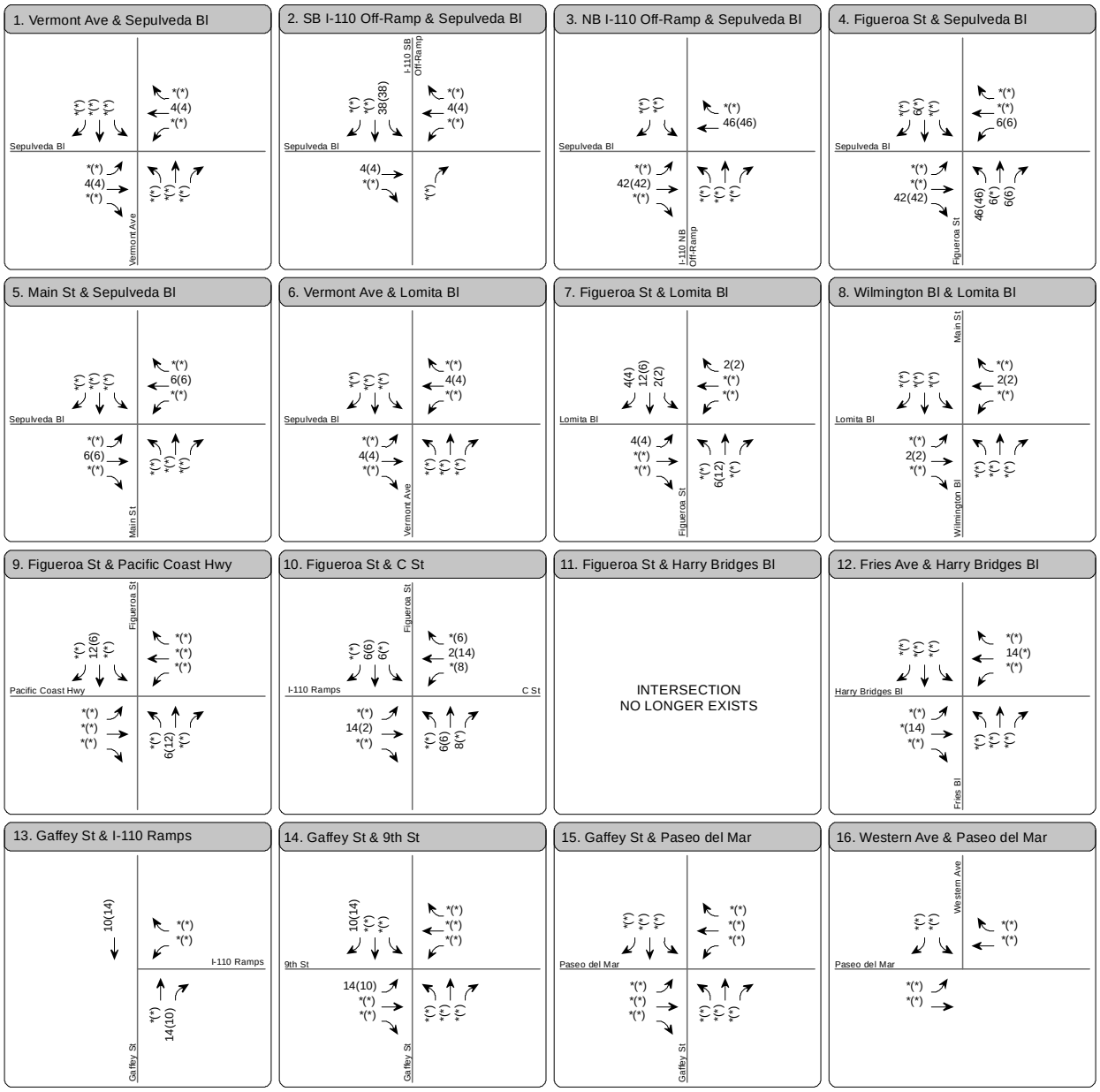
Operation

CEQA Analysis

Once the tunnel construction is complete, the shaft would be capped with a removable cover for future access to support operations and maintenance of the tunnel. In the operational phase of this project element, the JWPCP East shaft site would be expected to generate negligible traffic, limited to a few trips per month for normal inspections and maintenance. At this level of activity, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.



LEGEND

A M(PM) Peak Hour Traffic Volume

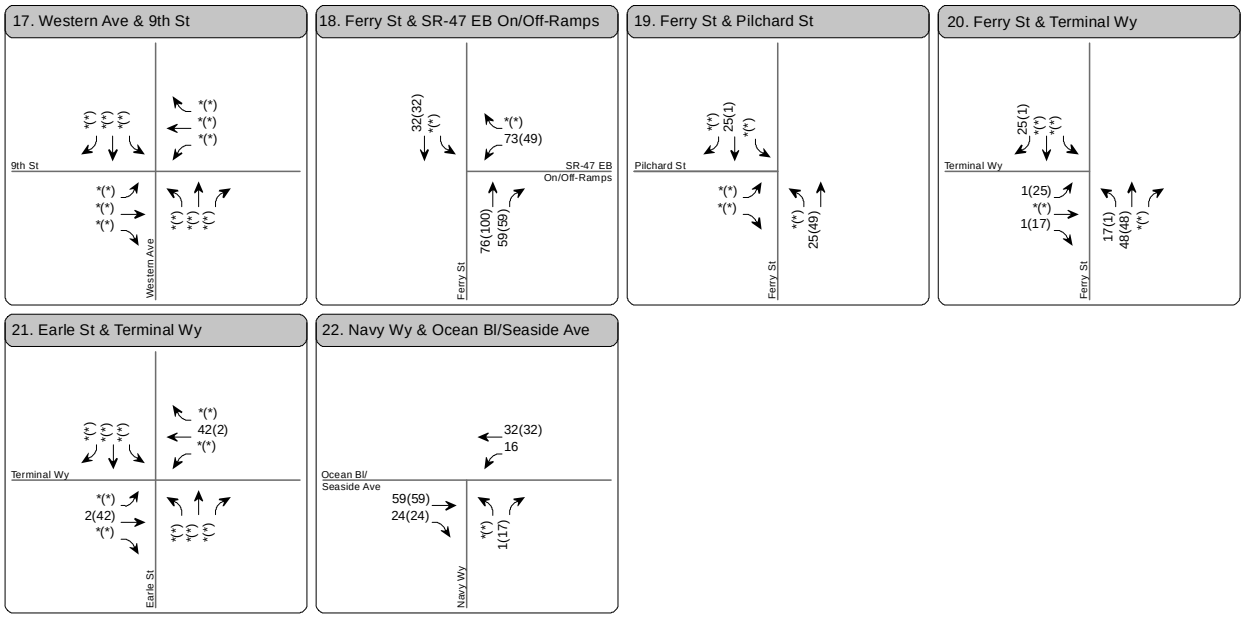
* No Traffic Data

FIGURE 18-8

CLEARWATER Program

Alternatives 1 and 2 (Project) Only (2017) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010



LEGEND

A M(PM) Peak Hour Traffic Volume

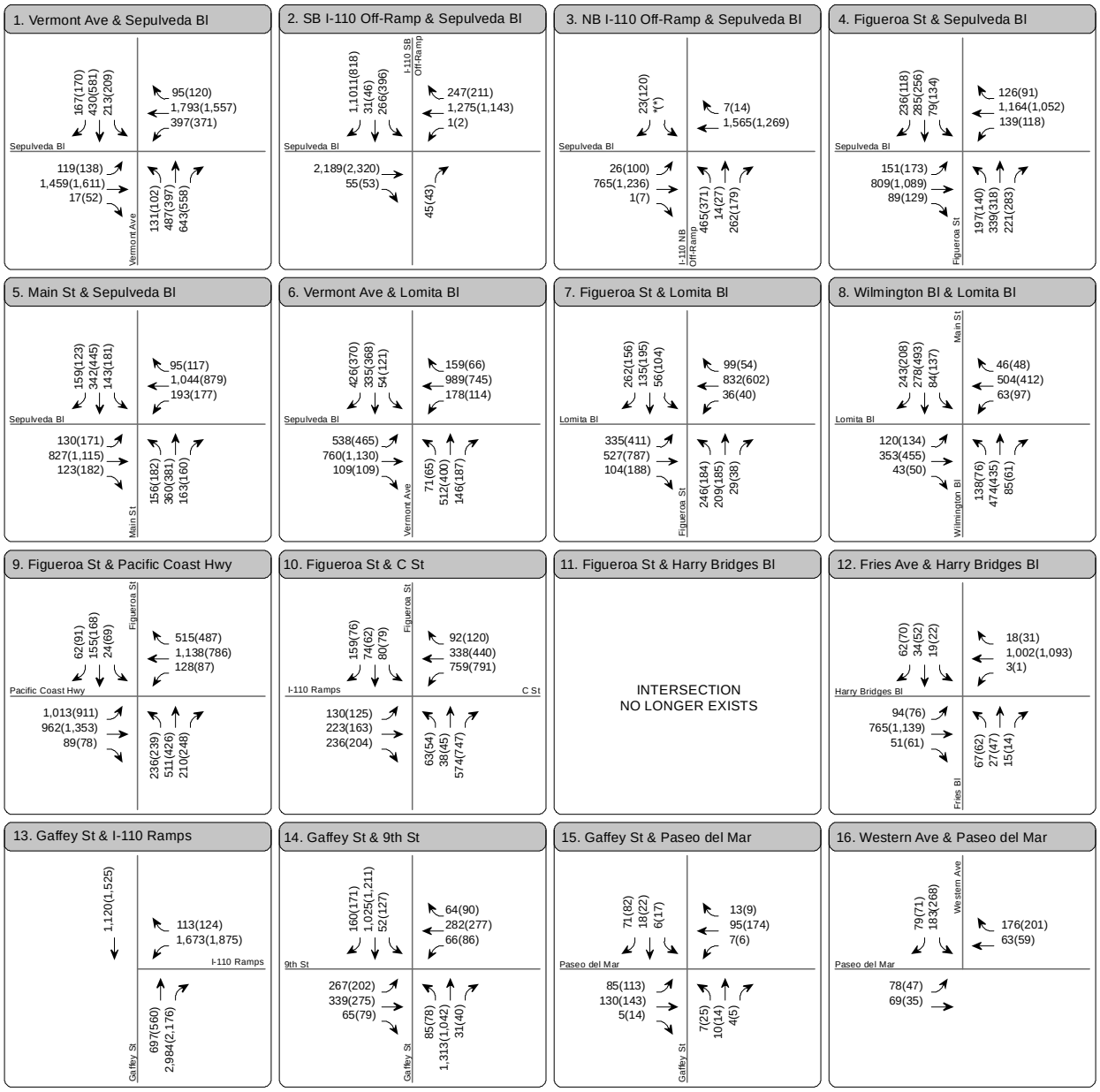
* No Traffic Data

FIGURE 18-8 (continued)

CLEARWATER Program

Alternatives 1 and 2 (Project) Only (2017)
Peak Hour Traffic Volumes

Source: Fehr & Peers 2010



LEGEND

A M(PM) Peak Hour Traffic Volume

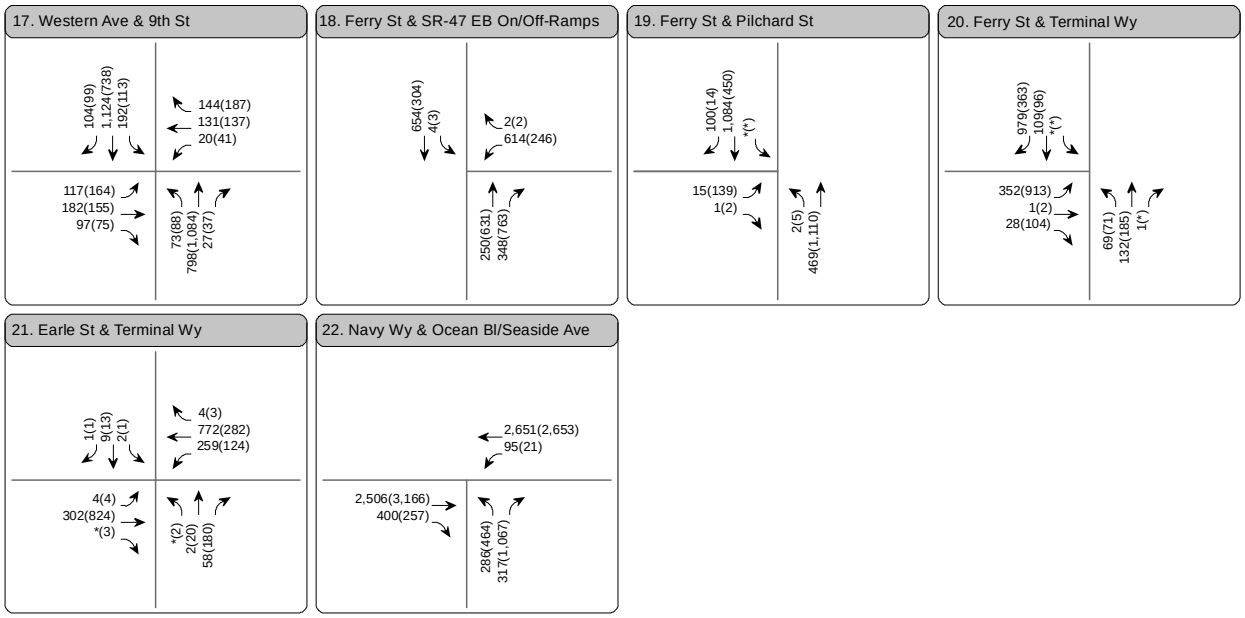
* No Traffic Data

FIGURE 18-9

CLEARWATER Program

Cumulative Base Plus Alternatives 1 and 2 (Project) Only (2017) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010



LEGEND

A M(PM) Peak Hour Traffic Volume

* No Traffic Data

FIGURE 18-9 (continued)

CLEARWATER Program

Cumulative Base Plus Alternatives 1 and 2 (Project) Only (2017) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010

Shaft Site – TraPac

Construction

CEQA Analysis

Assumptions made to determine future 2017 baseline conditions for this shaft site are summarized in Section 18.4.1. The location of the study intersections for Alternative 1 (Project) are shown on Figure 18-7, and LOS calculations for study intersections surrounding this shaft site are presented in Table 18-10. As indicated in the table, the two study intersections in the vicinity of the TraPac shaft site are projected to operate at LOS D or better during the AM and PM peak hours under the 2017 baseline conditions.

During the various construction phases, hauling of supplies and disposal of excavated soil by truck and travel by construction workers and employees would generate traffic over the surrounding regional and local transportation system. The construction-related traffic impact analysis was based on the most intense period (worst-case scenario) of construction between 2014 and 2021. Peak construction would occur during the first quarter of 2017. During construction of this shaft site, which would last approximately 10 to 11 months, 20 worker and 260 PCE truck trips (10 inbound worker, 10 outbound worker, 130 inbound PCE truck, 130 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 26 peak hour PCE truck trips (10 inbound worker, 12 inbound PCE truck, and 14 outbound PCE truck in the AM peak hour, and 10 outbound worker, 12 inbound PCE, and 14 outbound PCE truck in the PM peak hour). During tunnel construction, which would last approximately 15 months, 80 worker and 8 PCE truck trips (40 inbound worker, 40 outbound worker, 4 inbound PCE truck, 4 outbound PCE truck) are estimated per day, including 40 peak hour worker and 4 PCE peak hour truck trips (40 inbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the AM peak hour, and 40 outbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the PM peak hour). During decommissioning of this shaft site, which would last approximately 3 months, 20 worker and 120 PCE truck trips (10 inbound worker, 10 outbound worker, 60 inbound PCE truck, 60 outbound PCE truck) are estimated per day, including 10 worker and 12 PCE truck trips (10 inbound worker, 10 outbound worker, 6 inbound PCE truck, 6 outbound PCE truck) during the peak hours. Trip generation used for this analysis is summarized in Table 18-12 through Table 18-15.

Construction worker trips for this shaft site were distributed onto the surrounding street network based on the general distribution described in Section 18.4.1. Truck trips were assumed to travel on Harry Bridges Boulevard to access I-110. The maximum estimated peak hour trips at the study intersections to and from this shaft site during construction are shown on Figure 18-8. The total projected peak hour traffic volumes at the study intersections are shown on Figure 18-9. Future 2017 LOS conditions during the construction period and an assessment of potential temporary adverse impacts are presented in Table 18-16.

Based on this analysis, the construction-related traffic associated with the TraPac shaft site would not significantly impact the two study intersections in its vicinity. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be indirect and temporary for onshore tunneling and direct and temporary for offshore tunneling. Refer to Table 18-12 through Table 18-15 for trips related to onshore and offshore tunneling.

Operation

CEQA Analysis

Once the tunnel construction is complete, the shaft would be capped with a removable cover for future access to support operations and maintenance of the tunnel. In the operational phase of this project element, the TraPac shaft site would be expected to generate negligible traffic, limited to a few trips per month for normal inspections and maintenance. At this level of activity, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – LAXT

Construction

CEQA Analysis

For the purposes of evaluating the greatest potential traffic impacts in the vicinity of the LAXT shaft site, it was analyzed as a shaft site that would be for tunnel boring work in two directions, one heading north toward the JWPCP East shaft site and the other heading south toward the Pacific Ocean. For a conservative approach, the number of trips analyzed is double that of what would occur if construction occurred at this site in only one direction with a single tunnel boring machine (TBM).

Assumptions made to determine future 2017 baseline conditions for this shaft site are summarized in Section 18.4.1. The location of the study intersections for Alternative 1 (Project) are shown on Figure 18-7, and LOS calculations for study intersections surrounding this shaft site are presented in Table 18-10. As indicated in the table, the five study intersections surrounding the LAXT shaft site are projected to operate at LOS D or better during the AM and PM peak hours under 2017 baseline conditions.

During the various construction phases, hauling of supplies and disposal of excavated soil by truck and travel by construction workers and employees would generate traffic over the surrounding regional and local transportation system. The construction-related traffic impact analysis was based on the most intense period (worst-case scenario) of construction between 2014 and 2021. Peak construction activity would occur during the first quarter of 2017. During construction of this shaft site, which would last approximately 12 to 15 months, 20 worker trips and 260 PCE truck trips (10 inbound worker, 10 outbound worker, 130 inbound PCE truck, 130 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 26 peak hour PCE truck trips (10 inbound worker, 12 inbound PCE truck, and 14 outbound PCE truck in the AM peak hour, and 10 outbound worker, 12 inbound PCE truck, and 14 outbound PCE truck in the PM peak hour). During onshore tunnel construction, which would last approximately 24 months, 240 worker and 444 PCE truck trips (120 inbound worker, 120 outbound worker, 222 inbound PCE truck, 222 outbound PCE truck) are estimated per day, including 80 peak hour worker trips and 44 peak hour PCE truck trips (40 inbound worker, 20 inbound PCE truck, and 24 outbound PCE trucks in the AM peak hour, and 40 outbound worker, 20 inbound PCE truck, and 24 outbound PCE truck in the PM peak hour). During offshore tunnel construction, which would last approximately 78 months, 240 worker and 564 PCE truck trips (120 inbound worker, 120 outbound worker, 282 inbound PCE truck, 282 outbound PCE truck) are estimated per day, including 80 peak hour worker trips and 58 peak hour PCE truck trips (40 inbound worker, 28 inbound PCE truck, and

30 outbound PCE truck in the AM peak hour, and 40 outbound worker, 28 inbound PCE truck, and 30 outbound PCE truck in the PM peak hour). During decommissioning of this shaft site, which would last approximately 2 to 5 months, 20 worker trips and 40 PCE truck trips (10 inbound worker, 10 outbound worker, 20 inbound PCE truck, 20 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 4 peak hour PCE truck trips (10 inbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the AM peak hour, and 10 outbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the PM peak hour) during the peak hours. Trip generation used for this analysis is summarized in Table 18-12 through Table 18-15.

Construction worker trips for this shaft site were distributed onto the surrounding street network based on the general distribution described in Section 18.4.1. Truck trips were assumed to travel on SR-47 to access I-110 and I-710. The maximum estimated peak hour trips at the study intersections to and from this shaft site during construction are shown on Figure 18-8. The total projected peak hour traffic volumes at the study intersections are shown on Figure 18-9. Future 2017 LOS conditions during the construction period and an assessment of potential temporary adverse impacts are presented in Table 18-16.

Based on this analysis, the construction-related traffic associated with the LAXT shaft site would not significantly impact the study intersections in its vicinity. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be indirect and temporary for onshore tunneling and direct and temporary for offshore tunneling. Refer to Table 18-12 through Table 18-15 for trips related to onshore and offshore tunneling.

Operation

CEQA Analysis

Once the tunnel construction is complete, the shaft would be capped with a removable cover for future access to support operations and maintenance of the tunnel. In the operational phase of this project element, the LAXT shaft site would be expected to generate negligible traffic, limited to a few trips per month for normal inspections and maintenance. At this level of activity, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Southwest Marine

Construction

CEQA Analysis

Assumptions made to determine future 2017 baseline conditions for this shaft site are summarized in Section 18.4.1. The location of the study intersections for Alternative 1 (Project) is shown on Figure 18-7, and LOS calculations for study intersections surrounding this shaft site are presented in

Table 18-10. As indicated in the table, the five study intersections surrounding the Southwest Marine shaft site are projected to operate at LOS D or better during the AM and PM peak hours under 2017 baseline conditions.

During the various construction phases, hauling of supplies and disposal of excavated soil by truck and travel by construction workers and employees would generate traffic over the surrounding regional and local transportation system. During construction of this shaft site, which would last approximately 10 to 11 months, 20 worker trips and 260 PCE truck trips (10 inbound worker, 10 outbound worker, 130 inbound PCE truck, 130 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 26 peak hour PCE truck trips (10 inbound worker, 12 inbound PCE truck, and 14 outbound PCE truck in the AM peak hour, and 10 outbound worker, 12 inbound PCE truck, and 14 outbound PCE truck in the PM peak hour). During offshore tunnel construction, which would last approximately 78 months, 80 worker trips and 8 PCE truck trips (40 inbound worker, 40 outbound worker, 4 inbound PCE truck, 4 outbound PCE truck) are estimated per day, including 40 worker and 4 PCE truck trips (40 inbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the AM peak hour, and 40 outbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the PM peak hour). During decommissioning of this shaft site, which would last approximately 3 months, 20 worker trips and 120 PCE truck trips (10 inbound worker, 10 outbound worker, 60 inbound PCE truck, 60 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 12 peak hour PCE truck trips (10 inbound worker, 6 inbound PCE truck, and 6 outbound PCE truck in the AM peak hour, and 10 outbound worker, 6 inbound PCE truck, and 6 outbound PCE truck in the PM peak hour). Trip generation used for this analysis is presented in Table 18-12 through Table 18-15. The intersection analysis presented for the LAXT shaft site includes trips associated with the Southwest Marine shaft site.

Based on this analysis, the additional construction-related traffic associated with the Southwest Marine shaft site would not significantly impact the study intersections in its vicinity. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be indirect and temporary for onshore tunneling and direct and temporary for offshore tunneling. Refer to Table 18-12 through Table 18-15 for trips related to onshore and offshore tunneling.

Operation

CEQA Analysis

Once the tunnel construction is complete, the shaft would be capped with a removable cover for future access to support operations and maintenance of the tunnel. In the operational phase of this project element, the Southwest Marine shaft site would be expected to generate negligible traffic, limited to a few trips per month for normal inspections and maintenance. At this level of activity, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

During the various construction phases, hauling of supplies by truck and travel by construction workers and employees would generate traffic over the surrounding regional and local transportation system. During riser and diffuser assembly and construction, which would last approximately 36 months, 30 worker and 32 PCE truck trips (15 inbound worker, 15 outbound worker, 16 inbound PCE truck, 16 outbound PCE truck) are estimated per day, including 15 worker trips and 4 PCE truck trips (15 inbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the AM peak hour, and 15 outbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the PM peak hour). Trip generation for this project element is summarized in Table 18-12 through Table 18-15.

Given the temporary nature of the construction-generated traffic within the Port of Los Angeles, as well as the modest number of estimated trips, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

In the operational phase, all operation and maintenance activities would occur in the Pacific Ocean. This project element would be expected to generate negligible vehicular traffic, limited to a few worker trips per month to and from a location within the Port of Los Angeles for normal inspections and maintenance. At this level of activity, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

As discussed in Section 2.2.4.3, the existing ocean outfalls extend from the existing manifold structure at Royal Palms. Assumptions made to determine future 2017 baseline conditions for this shaft site are summarized Section 18.4.1. The location of the study intersections for Alternative 1 (Project) is shown on Figure 18-7, and LOS calculations for study intersections surrounding this area are presented in Table 18-10. As indicated in the table, the study intersections in the vicinity of the Port of Los Angeles are projected to operate at LOS D or better during the AM and PM peak hours under 2017 baseline conditions.

During the rehabilitation-related construction work, barges would be deployed from a location in the Port of Los Angeles hauling of supplies by truck and travel by construction workers and employees would

generate traffic over the surrounding regional and local transportation system. The traffic impact analysis was based on the most intense period (worst-case scenario) of rehabilitation between 2014 and 2021, which would occur during the first quarter of 2017. During existing ocean outfalls rehabilitation, which would last approximately 9 months and would occur well after the overall peak of construction activity for Alternative 1, 20 worker trips (10 inbound, 10 outbound) are estimated per day, and these trips are anticipated during the AM and PM peak hours. Truck trips would be nominal. Trip generation used for this analysis is summarized in Table 18-12 through Table 18-15.

Given the modest number of estimated trips, as well as the temporary nature of the construction-generated traffic within the Port of Los Angeles, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

No additional traffic would be needed to operate and maintain the existing ocean outfalls once they have been rehabilitated. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 1 (Project) would not conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact TRT-2. Would Alternative 1 (Project) conflict with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With

respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

There are six CMP arterial monitoring stations in the vicinity of the proposed shaft sites.

- Western Avenue/Pacific Coast Highway
- Figueroa Street/Pacific Coast Highway (study intersection 9)
- Alameda Street/Pacific Coast Highway
- Western Avenue/Toscanini Drive
- Gaffey Street/9th Street (study intersection 14)
- Western Avenue/9th Street (study intersection 17)

As shown on Figure 18-8, Alternative 1 (Project) would not add more than 50 peak hour trips to Figueroa Street/Pacific Coast Highway, Gaffey Street/9th Street, and Western Avenue/9th Street. Alternative 1 (Project) is not expected to add enough new traffic to exceed the arterial analysis criteria of 50 vehicle trips at the three locations that were not fully analyzed under Impact TRT-1. In addition, construction-related trips would be of limited duration. Based on these considerations, construction-related traffic impacts would be less than significant.

A regional analysis was conducted to quantify potential temporary impacts on the regional freeway system in the vicinity of Alternative 1 (Project), including segments of I-110 and the I-710. Three freeway locations were identified for analysis.

- Route 110, at post mile 2.77, at Wilmington (CMP freeway monitoring station)
- Route 110, at post mile 7.016, at Carson Street
- Route 710, at post mile 7.60, at Willow Street (CMP freeway monitoring station)

Existing freeway mainline traffic volumes were obtained from the 2008 Traffic Volumes on California State Highways (California Department of Transportation 2008) for the three selected mainline freeway locations. Peak hour volumes by direction were derived by applying directional and peak hour factors in 2008 Traffic Volumes on California State Highways, and freeway LOS was analyzed using the

demand-to-capacity (D/C) methodology. A growth rate of 0.65 percent per year was applied to these traffic volumes to estimate 2010 existing base conditions for these freeway segments. As discussed in Section 18.4.1, because the current CMP projects a slightly lower growth rate for the study area (0.51 percent per year), the analysis presented here is conservative in the assumption regarding ambient traffic growth. The D/C ratios were calculated for each freeway segment using a capacity value of 2,000 vehicles per hour per freeway mainline lane for freeway mixed-flow lanes. Freeway segment LOS was determined based on V/C ratios and the definitions shown in Table 18-17. The existing D/C ratios during the morning and afternoon peak hours at both the CMP freeway monitoring locations and other selected highway segments are shown in Table 18-18. The analysis indicates that the study segments along I-710 and I-110 at Carson Street currently operate at LOS F during the AM and PM peak hours.

Table 18-17. Freeway Segment Level of Service Definitions

Level of Service	Demand/Capacity Ratio	Flow Conditions
A	0.00–0.35	Highest quality of service. Free traffic flow, low volumes, and low densities. Little or no restriction on maneuverability or speed.
B	0.36–0.54	Stable traffic flow, speed becoming slightly restricted. Low restriction on maneuverability.
C	0.55–0.77	Stable traffic flow, but less freedom to select speed, change lanes, or pass. Density increasing.
D	0.78–0.93	Approaching unstable flow. Speeds tolerable but subject to sudden and considerable variation. Less maneuverability and driver comfort.
E	0.94–1.00	Unstable traffic flow with rapidly fluctuating speeds and flow rates. Short headways, low maneuverability, and low driver comfort.
F(0)	1.01–1.25	Forced traffic flow. Speed and flow may be greatly reduced with high densities.
F(1)	1.26–1.35	Forced traffic flow. Severe congested conditions prevail for more than 1 hour. Speed and flow may drop to zero with high densities.
F(2)	1.36–1.45	Forced traffic flow. Severe congested conditions prevail for more than 1 hour. Speed and flow may drop to zero with high densities.
F(3)	>1.45	Forced traffic flow. Severe congested conditions prevail for more than 1 hour. Speed and flow may drop to zero with high densities.

Source: Adapted from 2004 Congestion Management Program for Los Angeles County (Los Angeles County Metropolitan Transportation Authority 2004)

Table 18-18. Existing and Future Freeway Volumes and Levels of Service for Alternatives 1 and 2 (Project)

				Existing (2010)			Cumulative Base (2017)			Alternatives 1 and 2 Peak Hour Trips	Future (2017) Alternatives 1 and 2 (Project)				
Freeway Segments	**Direction**	**# of Lanes**	**Capacity**	**Peak Hour Volume[a]**	**D/C Ratio**	**LOS**	**Peak Hour Volume**	**D/C Ratio**	**LOS**		**Peak Hour Volume**	**D/C Ratio**	**LOS**	**Project-related D/C Change**	**Significant Impact**
AM Peak Hour															
Harbor Freeway (I-110)															
@ Wilmington, south of C Street – Mile 2.77[b]	NB	4	8,000	7,450	0.931	E	7,789	0.974	E	60	7,849	0.981	E	0.008	No
	SB	4	8,000	5,491	0.686	C	5,741	0.718	C	73	5,814	0.727	C	0.009	No
@ Carson Street – Mile 7.016	NB	4	8,000	9,150	1.144	F(0)	9,566	1.196	F(0)	62	9,628	1.204	F(0)	0.008	No
	SB	4	8,000	7,039	0.880	D	7,359	0.920	D	87	7,446	0.931	E	0.011	No
Long Beach Freeway (I-710)															
North of Junction Route 1 (PCH), Willow Street – Mile 7.60[b]	NB	3	6,000	6,128	1.021	F(0)	6,407	1.068	F(0)	60	6,467	1.078	F(0)	0.010	No
	SB	3	6,000	6,408	1.068	F(0)	6,700	1.117	F(0)	73	6,773	1.129	F(0)	0.012	No
PM Peak Hour															
Harbor Freeway (I-110)															
@ Wilmington, south of C Street – Mile 2.77[b]	NB	4	8,000	5,014	0.627	C	5,242	0.655	C	76	5,318	0.665	C	0.009	No
	SB	4	8,000	7,173	0.897	D	7,499	0.937	E	57	7,556	0.945	E	0.007	No
@ Carson Street – Mile 7.016	NB	4	8,000	6,369	0.796	D	6,659	0.832	D	90	6,749	0.844	D	0.011	No
	SB	4	8,000	8,687	1.086	F(0)	9,082	1.135	F(0)	59	9,141	1.143	F(0)	0.007	No
Long Beach Freeway (I-710)															
North of Junction Route 1 (PCH), Willow Street – Mile 7.60[b]	NB	3	6,000	5,807	0.968	E	6,071	1.012	F(0)	76	6,147	1.025	F(0)	0.013	No
	SB	3	6,000	4,372	0.729	C	4,571	0.762	C	57	4,628	0.771	D	0.009	No

[a] Caltrans Data – factored from 2008 to 2010 conditions

[b] The post miles of the count data are in close proximity to the two identified CMP freeway monitoring stations, including I-110 south of C Street (at post mile 2.77) and I-710 south of Willow Street (at post mile 7.887).

The methodology used to develop forecasts of future year 2017 freeway volumes with and without the addition of trips added by Alternative 1 (Project) is similar to that used for the analyzed intersections. The year 2017 cumulative base freeway traffic volumes were developed by factoring the baseline volumes by 0.65 percent per year to reflect cumulative growth. The year 2017 peak hour traffic volumes and projected D/C ratio for the analyzed freeway segments are presented in Table 18-18. The trip distribution patterns, described in Section 18.4.1, were used for this analysis to identify freeway locations at which the project would temporarily add considerable new trips.

The projected D/C ratios under 2017 cumulative plus Alternative 1 (Project) conditions and the incremental increase are presented in Table 18-18. The significant impact criteria established by the CMP provide that a project would generate significant regional freeway impacts if the projected LOS is LOS F and the increase in D/C ratio caused by the project traffic is equal to or more than 0.02. As shown, Alternative 1 (Project) would not have any significant impacts on the adjacent freeway segments during either the AM or PM peak hours.

The methodology described in CMP was used to estimate the number of additional transit trips that may occur during construction. This methodology states that transit trips may be approximately 3.5 percent of vehicle trips. Applying this estimate to the estimated construction worker trips, it is estimated that up to six new transit person trips (three inbound and three outbound) may occur near each of the construction sites. Each shaft site is served by at least one of the transit lines described in Section 18.4.1. At this level of increase, impacts on the regional transit system would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

In the operational phase, the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites would be expected to generate negligible traffic, limited to a few trips per month for normal inspections and maintenance. Based on the CMP impact criteria summarized in Section 18.4.1, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

As stated in Section 18.2.3.3, the parts and materials for the riser and diffuser would be brought to the Pasha Terminal within the Port of Los Angeles. Based on the trip generation estimates presented in

Table 18-12 through Table 18-15, fewer than 50 peak hour trips would be generated. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Because no additional traffic on the surrounding roadway network is anticipated during the operational phase of this project element, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

As stated in Section 18.2.3.3, rehabilitation of the existing ocean outfalls would occur in the Pacific Ocean, with the boat departing from within the Port of Los Angeles. Based on the trip generation estimates presented in Table 18-12 through Table 18-15, fewer than 50 peak hour trips would be generated. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

No additional traffic would be needed to operate and maintain the existing ocean outfalls once they have been rehabilitated. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not conflict with an applicable congestion management program, including but not limited to LOS standards established by the county congestion management agency for designated roads or highways. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction and operation of Alternative 1 (Project) would not conflict with an applicable congestion management program, including but not limited to LOS standards established by the county congestion management agency for designated roads or highways. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact TRT-4. Would Alternative 1 (Project) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

Because all construction activities would be located on site, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would be located on site, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

As stated in Section 18.2.3.3, the parts and materials for the riser and diffuser would be pre-assembled at the Pasha Terminal within the Port of Los Angeles. It is assumed that all construction activities would be located on the pre-assembly site and, therefore, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would occur in the Pacific Ocean, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Because all construction activities would occur in the Pacific Ocean with boats departing from within the Port of Los Angeles, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would occur in the Pacific Ocean, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). There would be no impacts under CEQA.

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

NEPA Impact Determination

Construction and operation of Alternative 1 (Project) would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) before mitigation. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

Impact TRT-5. Would Alternative 1 (Project) result in inadequate emergency access?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. Because all operation and maintenance activities would occur underground, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. Because all operation and maintenance activities would occur underground, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

Because all construction activities would be located on site, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would be located on site, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

As stated in Section 18.2.3.3, the parts and materials for the riser and diffuser would be pre-assembled at the Pasha Terminal within the Port of Los Angeles. It is assumed that all construction activities would be located on the pre-assembly site and, therefore, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would occur in the Pacific Ocean, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Because all construction activities would occur in the Pacific Ocean, with boats departing from within the Port of Los Angeles, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would occur in the Pacific Ocean, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not result in inadequate emergency access. There would be no impacts under CEQA.

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

NEPA Impact Determination
Construction and operation of Alternative 1 (Project) would not result in inadequate emergency access. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

Impact TRT-6. Would Alternative 1 (Project) conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. Because all operation and maintenance activities would occur underground, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. Because all operation and maintenance activities would occur underground, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

Because all construction activities would be located on site, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would be located on site, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

As stated in Section 18.2.3.3, the parts and materials for the riser and diffuser would be pre-assembled at the Pasha Terminal within the Port of Los Angeles. It is assumed that all construction activities would be located on the pre-assembly site and, therefore, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would occur in the Pacific Ocean, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

Because all construction activities would occur in the Pacific Ocean, with boats departing from within the Port of Los Angeles, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would occur in the Pacific Ocean, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities. There would be no impacts under CEQA.

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

NEPA Impact Determination

Construction and operation of Alternative 1 (Project) would not conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

18.4.3.3 Impact Summary – Alternative 1

Impacts on terrestrial transportation and traffic analyzed in this EIR/EIS for Alternative 1 are summarized in Table 18-19 and Table 18-20. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 18-19. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact TRT-1. Would Alternative 1 (Program) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
SJCWRP			
Plant Expansion	CEQA Significant Impact During Construction	MM TRT-1. Prepare and implement a construction traffic management plan. The plan will be submitted to the appropriate local agency for review and approval prior to the start of any construction work. This plan will include such elements as the project schedule, the designation of haul routes for construction-related trucks, the location of	CEQA Less Than Significant Impact During Construction

Table 18-19 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
		access to the construction site, designated staging and parking areas for workers and equipment, any driveway turning movement restrictions, any temporary traffic control devices or flagmen, and any travel time restrictions for construction-related traffic to avoid peak travel periods on selected roadways.	
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Process Optimization	CEQA Significant Impact During Construction	MM TRT-1	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
POWRP			
Process Optimization	CEQA Significant Impact During Construction	MM TRT-1	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LCWRP			
Process Optimization	CEQA Significant Impact During Construction	MM TRT-1	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LBWRP			
Process Optimization	CEQA Significant Impact During Construction	MM TRT-1	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
JWPCP			
Solids Processing	CEQA Significant Impact During Construction	MM TRT-1	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Biosolids Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact TRT-2. Would Alternative 1 (Program) conflict with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation

Table 18-19 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Biosolids Management	CEQA Less Than Significant Impact During Operation	No mitigation is required.	CEQA Less Than Significant Impact During Operation
Impact TRT-4. Would Alternative 1 (Program) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
SJCWRP			
Plant Expansion	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation

Table 18-19 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
POWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LCWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LBWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
JWPCP			
Solids Processing	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Biosolids Management	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Impact TRT-5. Would Alternative 1 (Program) result in inadequate emergency access?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
SJCWRP			
Plant Expansion	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation

Table 18-19 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
POWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LCWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LBWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
JWPCP			
Solids Processing	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Biosolids Management	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Impact TRT-6. Would Alternative 1 (Program) conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
SJCWRP			
Plant Expansion	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
POWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation

Table 18-19 (Continued)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
LCWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
LBWRP			
Process Optimization	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
JWPCP			
Solids Processing	CEQA No Impact During Construction	No mitigation is required.	CEQA No Impact During Construction
	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation
Biosolids Management	CEQA No Impact During Operation	No mitigation is required.	CEQA No Impact During Operation

Table 18-20. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRT-1. Would Alternative 1 (Project) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 18-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 18-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-2. Would Alternative 1 (Project) conflict with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation

Table 18-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 18-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 18-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRT-4. Would Alternative 1 (Project) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 18-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Rise/Diffuser Area				
SP Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-5. Would Alternative 1 (Project) result in inadequate emergency access?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction

Table 18-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 18-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-6. Would Alternative 1 (Project) conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 18-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to SP Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation

Table 18-20 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
SP Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

18.4.4 Alternative 2

18.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

18.4.4.2 Project

The impacts for the onshore tunnel; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; and the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact TRT-1. Would Alternative 2 (Project) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites for Alternative 1 (Project). Construction for the offshore tunnel of Alternative 2 (Project) would last approximately 60 months, which is 18 months less than would be required to construct the offshore tunnel of Alternative 1 (Project).

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations under Alternative 1 (Project). No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

During the various construction phases, hauling of supplies and disposal of excavated soil by truck and travel by construction workers and employees would generate traffic over the surrounding regional and local transportation system. During riser and diffuser assembly and construction, which would last approximately 36 months, 30 worker and 32 PCE truck trips (15 inbound worker, 15 outbound worker, 16 inbound PCE truck, 16 outbound PCE truck) are estimated per day, including 15 peak hour worker trips and 4 peak hour PCE truck trips (15 inbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the AM peak hour, and 15 outbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the PM peak hour). Trip generation for this element is summarized in Table 18-12 through Table 18-15.

Given the temporary nature of the construction-generated traffic within the Port of Los Angeles, as well as the modest number of estimated trips, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operations

CEQA Analysis

Because all operation and maintenance activities would occur in the Pacific Ocean, no additional traffic on the surrounding roadway network is anticipated. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 2 (Project) would not conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 2 (Project) would not conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact TRT-2. Would Alternative 2 (Project) conflict with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations under Alternative 1 (Project). Therefore, construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations under Alternative 1 (Project). No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
As stated in Section 18.2.3.3, the parts and materials for the riser and diffuser would be pre-fabricated on land and would be brought to the Pasha Terminal within the Port of Los Angeles. Based on the trip generation estimates presented in Table 18-12 through Table 18-15, fewer than 50 peak hour trips would be generated. Therefore, impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis
Because no additional traffic on the surrounding roadway network is anticipated during the operational phase of this element, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Construction and operation of Alternative 2 (Project) would not conflict with an applicable congestion management program, including but not limited to LOS standards established by the county congestion management agency for designated roads or highways. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction and operation of Alternative 2 (Project) would not conflict with an applicable congestion management program, including but not limited to LOS standards established by the county congestion management agency for designated roads or highways. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact TRT-4. Would Alternative 2 (Project) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations under Alternative 1 (Project). Therefore, construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations under Alternative 1 (Project). No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

As stated in Section 18.2.3.3, the parts and materials for the riser and diffuser would be pre-assembled at the Pasha Terminal within the Port of Los Angeles. It is assumed that all construction activities would be located on the pre-assembly site and, therefore, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would occur in the Pacific Ocean, no changes to the existing roadway network or any public rights-of-way are anticipated. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 2 (Project) would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). There would be no impacts under CEQA.

Mitigation

No mitigation is required.

Residual Impacts
No impacts would occur.

NEPA Impact Determination
Construction and operation of Alternative 2 (Project) would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

Impact TRT-5. Would Alternative 2 (Project) result in inadequate emergency access?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations under Alternative 1 (Project). Therefore, construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations under Alternative 1 (Project). Because all operation and maintenance activities would occur underground, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
As stated in Section 18.2.3.3, the parts and materials for the riser and diffuser would be pre-assembled at the Pasha Terminal within the Port of Los Angeles. It is assumed that all construction activities would be

located on the pre-assembly site and, therefore, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
Because all operation and maintenance activities would occur in the Pacific Ocean, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Construction and operation of Alternative 2 (Project) would not result in inadequate emergency access. There would be no impacts under CEQA.

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

NEPA Impact Determination
Construction and operation of Alternative 2 (Project) would not result in inadequate emergency access. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

Impact TRT-6. Would Alternative 2 (Project) conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations under Alternative 1 (Project). Therefore, construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations under Alternative 1 (Project). Because all operation and maintenance activities would occur underground, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
As stated in Section 18.2.3.3, the parts and materials for the riser and diffuser would be pre-assembled at the Pasha Terminal within the Port of Los Angeles. It is assumed that all construction activities would be located on the pre-assembly site and, therefore, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
Because all operation and maintenance activities would occur in the Pacific Ocean, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Construction and operation of Alternative 2 (Project) would not conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities. There would be no impacts under CEQA.

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

NEPA Impact Determination
Construction and operation of Alternative 2 (Project) would not conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

18.4.4.3 Impact Summary – Alternative 2

Impacts on terrestrial transportation and traffic for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 18-19. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 18-21. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 18-21. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRT-1. Would Alternative 2 (Project) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 18-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 18-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-2. Would Alternative 2 (Project) conflict with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation

Table 18-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 18-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 18-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRT-4. Would Alternative 2 (Project) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 18-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-5. Would Alternative 2 (Project) result in inadequate emergency access?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction

Table 18-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 18-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-6. Would Alternative 2 (Project) conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction

Table 18-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Wilmington to PV Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP East	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
TraPac	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
LAXT	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation

Table 18-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Southwest Marine	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

18.4.5 Alternative 3

18.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

18.4.5.2 Project

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as those described for Alternative 2 (Project). The impacts for the existing ocean outfalls for Alternative 3 (Project) would be the same as those described for Alternative 1 (Project).

Impact TRT-1. Would Alternative 3 (Project) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as those described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Site – JWPCP West

Construction

CEQA Analysis

Assumptions made to determine future 2019 baseline conditions for this shaft site are summarized in Section 18.4.1. The location of the study intersections for Alternative 3 (Project) are shown on Figure 18-10, and LOS calculations for study intersections surrounding this shaft site are presented in Table 18-10. As indicated in the table, five of the nine study intersections surrounding the JWPCP West shaft site are projected to operate at LOS D or better during the AM and PM peak hours under 2019 baseline conditions. The exceptions are Sepulveda Boulevard/Vermont Avenue (AM and PM peak hours), Southbound I-110 Off-Ramp/Sepulveda Boulevard (AM peak hour), Lomita Boulevard/Vermont Avenue (AM peak hour), and Pacific Coast Highway/Figueroa Street (AM peak hour).

During the various construction phases, hauling of supplies and disposal of excavated soil by truck and travel by construction workers and employees would generate traffic over the surrounding regional and local transportation system. The construction-related traffic impact analysis was based on the most intense period of construction activity (worst-case scenario) of the construction between 2014 and 2021. Peak construction would occur in 2019. During construction of this shaft site, which would last approximately 10 to 12 months, 20 worker and 260 PCE truck trips (10 inbound worker, 10 outbound worker, 130 inbound PCE truck, 130 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 26 peak hour PCE truck trips (10 inbound worker, 12 inbound PCE truck, and 14 outbound PCE truck in the AM peak hour, and 10 outbound worker, 12 inbound PCE truck, and 14 outbound PCE truck in the PM peak hour). During onshore tunnel construction, which would last approximately 45 months, 240 worker and 444 PCE truck trips (120 inbound worker, 120 outbound worker, 222 inbound PCE truck, 222 outbound PCE truck) are estimated per day, including 80 peak hour worker and 44 peak hour PCE truck trips (40 inbound worker, 20 inbound PCE truck, and 24 outbound PCE truck in the AM peak hour, and 40 outbound worker, 20 inbound PCE truck, and 24 outbound PCE truck in the PM peak hour). During offshore tunnel construction, which would last approximately 15 months, 240 worker and 564 PCE truck trips (120 inbound worker, 120 outbound worker, 282 inbound PCE truck, 282 outbound PCE truck) are estimated per day, including 80 peak hour worker trips and 58 peak hour PCE truck trips (40 inbound worker, 28 inbound PCE truck, and 30 outbound PCE truck in the AM peak hour, and 40 outbound worker, 28 inbound PCE truck, and 30 outbound PCE truck in the PM peak hour). During decommissioning of this shaft site, which would last approximately 2 to 5 months, 20 worker and 40 PCE truck trips (10 inbound worker, 10 outbound worker, 20 inbound PCE truck, 20 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 4 peak hour PCE truck trips (10 inbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the AM peak hour, and 10 outbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the PM peak hour). Trip generation used for this analysis is summarized in Table 18-22 through Table 18-25.

FIGURE 18-10

CLEARWATER Program

Analyzed Intersections Alternatives 3 and 4 (Project)

Source: Sanitation Districts of Los Angeles County 2011, Fehr & Peers 2010, Thomas Bros. 2011, ESRI 2011

Table 18-22. Alternative 3 (Project) Construction Truck PCE Trip Generation Estimates by Location and by Phase Assuming Maximum Truck Trips

Site and Phase	Duration (Months)	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
JWPCP West Shaft								
Shaft Construction	10–12	260[a]	12	14	26	12	14	26
Onshore Tunneling	45[b]	444[c]	20	24	44	20	24	44
Offshore Tunneling	15[d]	564[e]	28	30	58	28	30	58
Shaft Covering and Site Restoration	2–5	40	2	2	4	2	2	4
Angels Gate Shaft								
Shaft Construction	8–9	160[f]	8	8	16	8	8	16
Shaft Site Use	18	8[g]	2	2	4	2	2	4
Shaft Covering and Site Restoration	3	120[h]	6	6	12	6	6	12
Riser and Diffuser Construction[i]	36	32	2	2	4	2	2	4
Existing Ocean Outfalls Rehabilitation	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A

PCE factor of 2.0 has been applied to these truck trips for traffic impact analysis.

[a] Estimated 65 truck round trips (130 total one-way) per day during shaft construction, which would last for 10 to 12 months.

[b] Assumed onshore tunneling rate of 34,000 feet at 35 feet per day and 30 working days per month.

[c] Number of truck trips for maximum production during onshore tunneling (up to 95 round trips for excavated material disposal and 16 round-trip deliveries; average activity is estimated to be 48 round trips for excavated material disposal and 9 round-trip deliveries).

[d] Assumed offshore tunneling rate of 11,400 feet at 40 feet per day and 30 working days per month.

[e] Number of truck trips for maximum production during offshore tunneling (up to 123 round trips for excavated material disposal and 18 round-trip deliveries; average activity is estimated to be 62 round trips for excavated material disposal and 10 round-trip deliveries).

[f] Estimated 40 truck round trips (80 total one-way) per day during shaft construction, which would last for 8 to 9 months.

[g] Estimated 2 truck round trips (4 total one-way) per day during tunnel construction, which would last for approximately 12 months.

[h] Number of truck trips for most intensive site restoration. Actual range of truck trips varies between 10 and 30 trips.

[i] Estimates for construction phase only. It is assumed that activity during pre-assembly and demobilization phases would be of similar intensity.

Source: Truck and worker trip estimates are based on information in the JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) and additional information.

Table 18-23. Alternative 3 (Project) Construction Worker Trip Generation Estimates by Location and Phase Assuming Maximum Worker Trips

Site and Phase	Duration (Months)	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
JWPCP West Shaft								
Shaft Construction	10–12	20[a]	10	0	10	0	10	10
Onshore Tunneling	45[b]	240[c]	40	40	80	40	40	80
Offshore Tunneling	15[d]	240[c]	40	40	80	40	40	80
Shaft Covering and Site Restoration	2–5	20[e]	10	0	10	0	10	10
Angels Gate Shaft								
Shaft Construction	8–9	20[a]	10	0	10	0	10	10
Shaft Site Use	18	80[f]	40	0	40	0	40	40
Shaft Covering and Site Restoration	3	20[e]	10	0	10	0	10	10
Riser and Diffuser Construction[g]	36	30[h]	15	0	15	0	15	15
Existing Ocean Outfalls Rehabilitation	9	20[i]	10	0	10	0	10	10

Table 18-23 (Continued)

Site and Phase	Duration (Months)	Daily	AM Peak Hour	PM Peak Hour

[a] Assumed a 10-hour work shift, 5 days per week. Approximately 10 workers would be needed to construct each shaft.
[b] Assumed onshore tunneling rate of 34,000 feet at 35 feet per day and 30 working days per month.
[c] 35–40 workers needed during tunnel construction, with shift changes occurring in the peak hour. A maximum assumption of 40 workers was used for 3- to 8-hour shifts.
[d] Assumed offshore tunneling rate of 11,400 feet at 40 feet per day and 30 working days per month.
[e] Assumed a 10-hour work shift, 5 days per week. Approximately 10 workers would be needed to decommission each shaft.
[f] Assumed a 10-hour work shift, 5 days per week. Approximately 35–40 workers would be needed for tunnel construction at access shafts.
[g] Estimates for construction phase only. It is assumed that activity during pre-assembly and demobilization phases would be of similar intensity.
[h] Assumed a 10-hour work shift, 5 days per week. Approximately 15 workers would be needed to construct the riser and diffuser.
[i] Assumed a 10-hour work shift, 5 days per week. Approximately 8–10 workers would be needed for existing ocean outfalls rehabilitation.
Source: Truck and worker trip estimates are based on information in the JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) and additional information.

Table 18-24. Alternative 3 (Project) Total PCE Construction Trip Generation Estimates by Location and Phase Assuming Maximum Truck and Worker Trips

Site and Phase	Duration (Months)	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
JWPCP West Shaft								
Shaft Construction	10–12	280	22	14	36	12	24	36
Onshore Tunneling	45[a]	684	60	64	124	60	64	124
Offshore Tunneling	15[b]	804	68	70	138	68	70	138
Shaft Covering and Site Restoration	2–5	60	12	2	14	2	12	14
Angels Gate Shaft								
Shaft Construction	8–9	180	18	8	26	8	18	26
Shaft Site Use	18	88	42	2	44	2	42	44
Shaft Covering and Site Restoration	3	140	16	6	22	6	16	22
Riser and Diffuser Construction[c]	36	62	17	2	19	2	17	19
Existing Ocean Outfalls Rehabilitation	9	20	10	0	10	0	10	10

PCE factor of 2.0 has been applied to these truck trips for traffic impact analysis.
[a] Assumed onshore tunneling rate of 34,000 feet at 35 feet per day and 30 working days per month.
[b] Assumed offshore tunneling rate of 11,400 feet at 40 feet per day and 30 working days per month.
[c] Estimates for construction phase only. It is assumed that activity during pre-assembly and demobilization phases would be of similar intensity.
Source: Truck and worker trip estimates are based on information in the JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) and additional information.

Table 18-25. Alternative 3 (Project) Total PCE Peak Hour Construction Trip Generation per Phase per Quarter Assuming Maximum Truck and Worker Trips

	2015				2016				2017				2018				2019				2020				2021				2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Submittals and TBM Fabrication																																
JWPCP West Shaft Construction	36	36	36	36																												
Site Preparation/Assemble TBM																																
Tunneling (Onshore)							124	124	124	124	124	124	124	124	124	124	124	124	124	124												
Tunneling (Offshore)																					138	138	138	138	138							
Angels Gate Shaft Construction																	26	26	26													
Angels Gate Shaft Use																				44	44	44	44	44	44							
PV Shelf Riser Construction													19	19	19	19	19	19	19	19												
PV Shelf Diffuser Construction																					19	19	19	19								
Existing Ocean Outfalls Rehabilitation																					10	10	10									
Demobilization																																
Total Trips per Quarter	36	36	36	36	0	0	124	124	124	124	124	124	124	143	143	143	143	169	169	169	187	**211**	**211**	**211**	201	182	0	0	0	0	0	0

Construction worker trips for this shaft site were distributed onto the surrounding street network based on the general distribution described in Section 18.4.1. Truck trips were assumed to travel on Figueroa Street and Sepulveda Boulevard to access I-110. The maximum estimated peak hour trips at the study intersections to and from this shaft site during construction is shown on Figure 18-11. The total projected peak hour traffic volumes at the study intersections are shown Figure 18-12. Future 2019 LOS conditions during the construction period and an assessment of potential temporary adverse impacts are presented in Table 18-26. Based on this analysis, the additional construction-related traffic associated with the JWPCP West shaft site would not significantly impact the nine study intersections in its vicinity. Therefore, impacts would be less than significant.

Table 18-26. Alternative 3 (Project) Future (2019) Intersection Level of Service Analysis and Impact Determination

	Intersection	Peak Hour	Cumulative Baseline 2019		Cumulative Plus Alternative 3 (Project) 2019		Project Increase in V/C	Adverse Project Impact
			V/C or Delay	LOS	V/C or Delay	LOS		
Study Intersections in the Vicinity of the JWPCP West Shaft Site								
1	Vermont Avenue	AM	0.992	E	0.993	E	0.001	No
	Sepulveda Boulevard	PM	0.981	E	0.982	E	0.001	No
2	SB I-110 Off-Ramp	AM	0.910	E	0.911	E	0.001	No
	Sepulveda Boulevard	PM	0.865	D	0.866	D	0.001	No
3	NB I-110 Off-Ramp	AM	0.746	C	0.757	C	0.011	No
	Sepulveda Boulevard	PM	0.736	C	0.747	C	0.011	No
4	Figueroa Street	AM	0.746	C	0.779	C	0.033	No
	Sepulveda Boulevard	PM	0.766	C	0.768	C	0.002	No
5	Main Street	AM	0.717	C	0.719	C	0.002	No
	Sepulveda Boulevard	PM	0.819	D	0.821	D	0.002	No
6	Vermont Avenue	AM	1.031	F	1.032	F	0.001	No
	Lomita Boulevard	PM	0.858	D	0.859	D	0.001	No
7	Figueroa Street	AM	0.787	C	0.788	C	0.001	No
	Lomita Boulevard	PM	0.724	C	0.744	C	0.020	No
8	Main Street/Wilmington Boulevard	AM	0.564	A	0.565	A	0.001	No
	Lomita Boulevard	PM	0.557	A	0.557	A	0.000	No
9	Figueroa Street	AM	0.958	E	0.962	E	0.004	No
	Pacific Coast Highway[a]	PM	0.887	D	0.892	D	0.005	No
Study Intersections in the Vicinity of the Angels Gate Shaft Site								
13	Gaffey Street	AM	0.551	A	0.563	A	0.012	No
	I-110 Ramps[a]	PM	0.689	B	0.689	B	0.000	No
14	Gaffey Street	AM	0.793	C	0.794	C	0.001	No
	9th Street[a]	PM	0.791	C	0.807	D	0.016	No
15	Gaffey Street	AM	8.500	A	8.700	A	--	No
	Paseo Del Mar[b]	PM	9.400	A	9.700	A	--	No
16	Western Avenue	AM	11.500	A	11.700	B	--	No
	Paseo Del Mar[c]	PM	12.200	A	12.400	B	--	No

Table 18-26 (Continued)

Intersection		Peak Hour	Cumulative Baseline 2019 V/C or Delay	Cumulative Baseline 2019 LOS	Cumulative Plus Alternative 3 (Project) 2019 V/C or Delay	Cumulative Plus Alternative 3 (Project) 2019 LOS	Project Increase in V/C	Adverse Project Impact
17	Western Avenue	AM	0.564	A	0.565	A	0.001	No
	9th Street[a]	PM	0.593	A	0.600	A	0.007	No

[a] Intersection is assumed to be operating under ATSAC and ATCS system in the future. Per LADOT guidelines, a 10 percent capacity credit has been taken at intersections operating with ATSAC/ATCS systems.

[b] Intersection is a four-way stop-controlled intersection. LOS is based on 2000 HCM four-way stop method. Average delay of the intersection is reported.

[c] Intersection is a one-way stop-controlled intersection. LOS is based on 2000 HCM unsignalized method. Worst approach delay of the intersection is reported.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Once the tunnel construction is complete, the shaft would be capped with a removable cover for future access to support operations and maintenance of the tunnel. In the operational phase of this project element, the JWPCP West shaft site would be expected to generate negligible traffic, limited to a few trips per month for normal inspections and maintenance. At this level of activity, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Site – Angels Gate

Construction

CEQA Analysis

Assumptions made to determine future 2019 baseline conditions for this shaft site are summarized in Section 18.4.1. The location of the study intersections for Alternative 3 (Project) are shown on Figure 18-10, and LOS calculations for study intersections surrounding this shaft site are presented in Table 18-10. As indicated in the table, the five study intersections surrounding the Angels Gate shaft site are projected to operate at LOS D or better during the morning and afternoon peak hours.

During the various construction phases, hauling of supplies and disposal of excavated soil by truck and travel by construction workers and employees would generate traffic over the surrounding regional and local transportation system. The construction-related traffic impact analysis was based on the most intense period (worst-case scenario) of construction between 2014 and 2021. Peak construction would occur in 2019. During construction of this shaft site, which would last approximately 8 to 9 months,

20 worker and 160 PCE truck trips (10 inbound worker, 10 outbound worker, 80 inbound PCE truck, 80 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 16 peak hour PCE truck trips (10 inbound worker, 8 inbound PCE truck, and 8 outbound PCE truck in the AM peak hour, and 10 outbound worker, 8 inbound PCE truck, and 8 outbound PCE truck in the PM peak hour). During tunnel construction, which would last approximately 18 months, 80 worker and 8 PCE truck trips (40 inbound worker, 40 outbound worker, 4 inbound PCE truck, 4 outbound PCE truck) are estimated per day, including 40 peak hour worker trips and 4 peak hour PCE truck trips (40 inbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the AM peak hour, and 40 outbound worker, 2 inbound PCE truck, and 2 outbound PCE truck in the PM peak hour). During decommissioning of this shaft site, which would last approximately 3 months, 20 worker and 120 PCE truck trips (10 inbound worker, 10 outbound worker, 60 inbound PCE truck, 60 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 12 peak hour PCE truck trips (10 inbound worker, 6 inbound PCE truck, and 6 outbound PCE truck in the AM peak hour, and 10 outbound worker, 6 inbound PCE truck, and 6 outbound PCE truck in the PM peak hour). Trip generation used for this analysis is summarized in Table 18-22 through Table 18-25.

Construction worker trips for this shaft site were distributed onto the surrounding street network based on the general distribution described in Section 18.4.1. Truck trips were assumed to travel on Gaffey Street to access I-110. The maximum estimated peak hour trips at the study intersections to and from this shaft site during construction are shown on Figure 18-11. The total projected peak hour traffic volumes at the study intersections are shown on Figure 18-12. Future 2019 LOS conditions during the construction period and an assessment of potential temporary adverse impact determination are presented in Table 18-26.

Based on this analysis, the additional construction-related traffic associated with the Angels Gate shaft site would not significantly impact the five study intersections in its vicinity. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be indirect and temporary for onshore tunneling and direct and temporary for offshore tunneling. Refer to Table 18-22 through Table 18-25 for trips related to onshore and offshore tunneling.

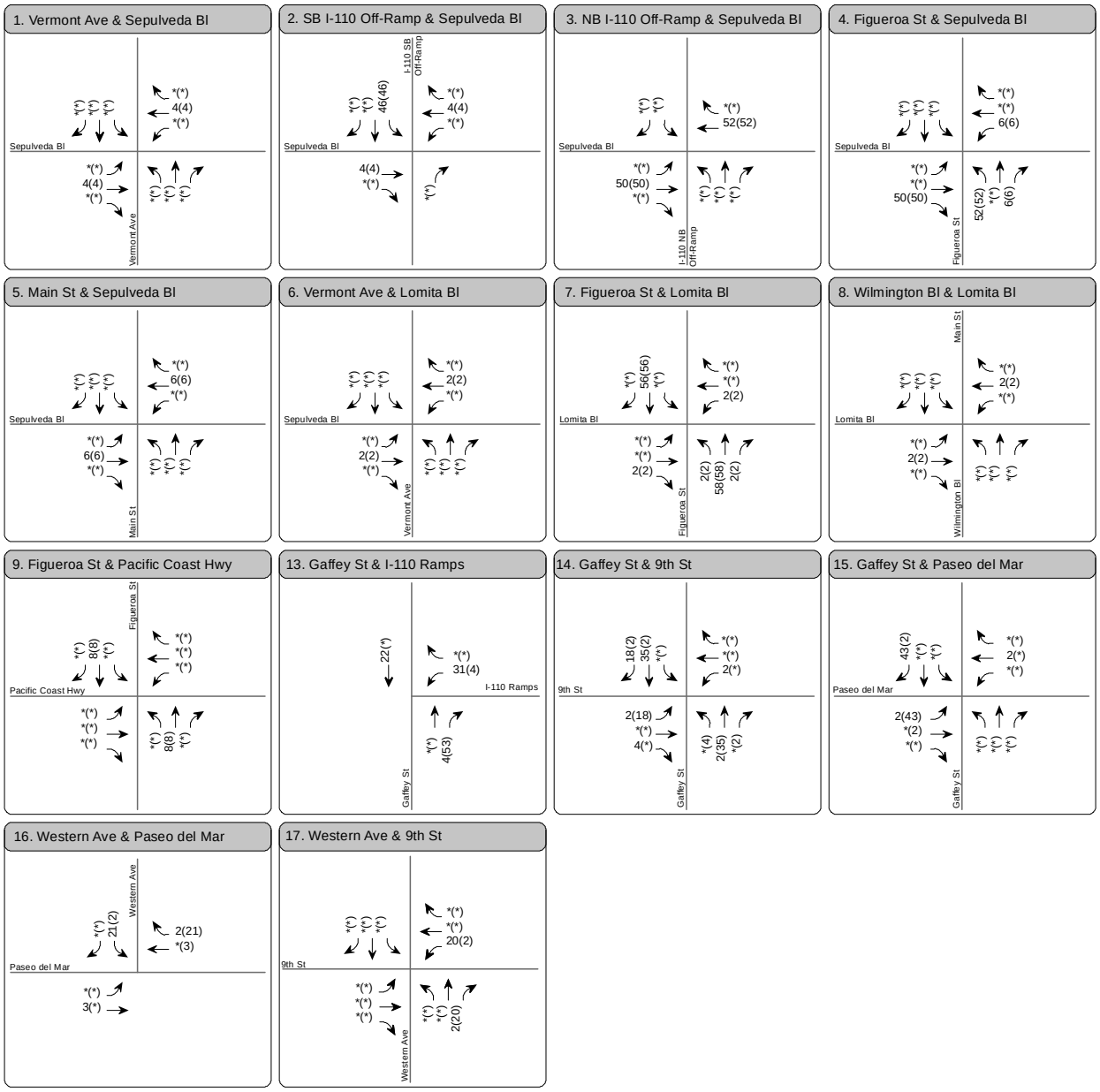
Operation

CEQA Analysis

Once the tunnel construction is complete, the shaft would be capped with a removable cover for future access to support operations and maintenance of the tunnel. In the operational phase of this project element, the Angels Gate shaft site would be expected to generate negligible traffic, limited to a few trips per month for normal inspections and maintenance. At this level of activity, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.



LEGEND

A M(PM) Peak Hour Traffic Volume

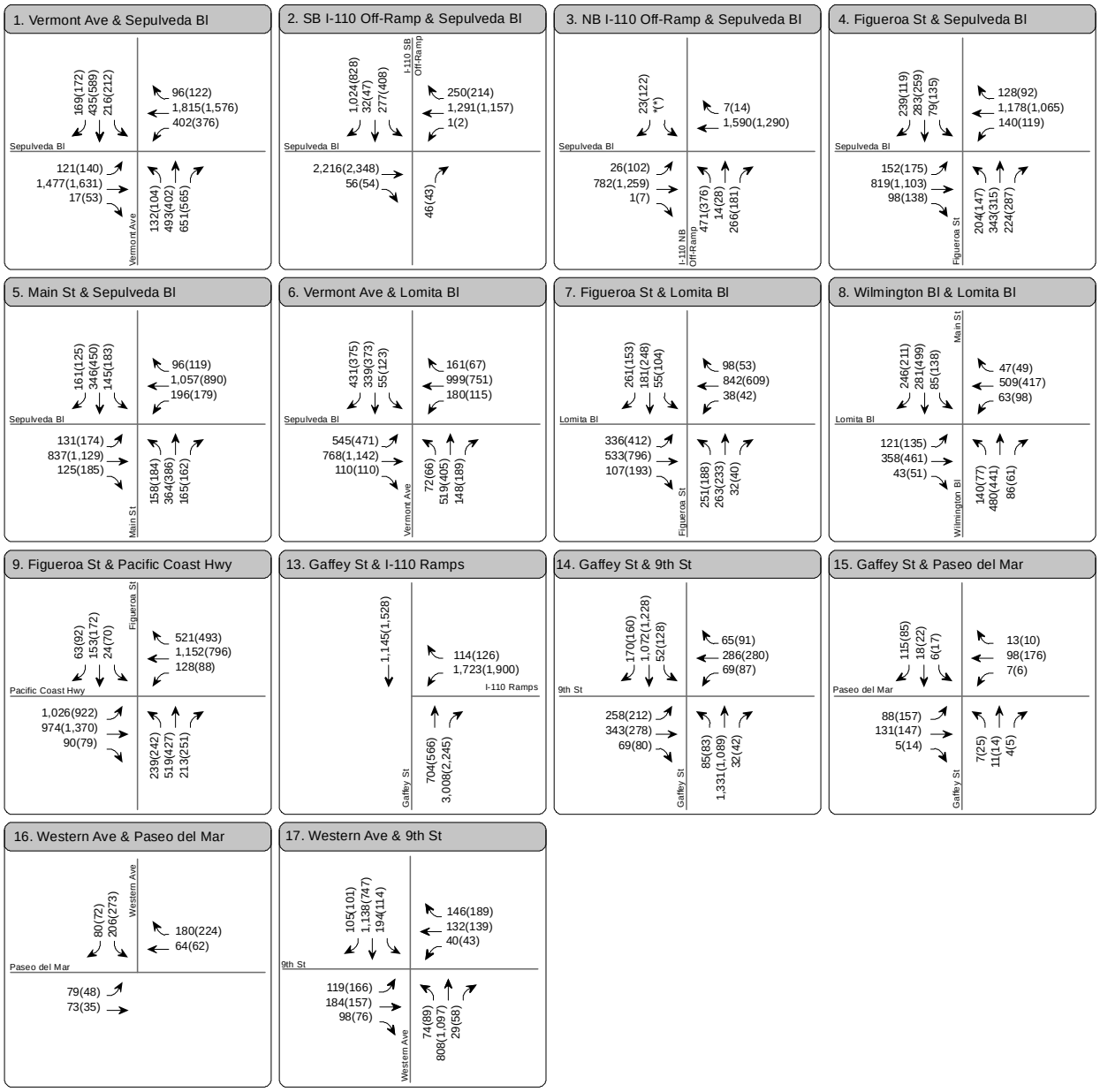
* No Traffic Data

FIGURE 18-11

CLEARWATER Program

Alternative 3 (Project) Only (2019) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010



LEGEND

A M(PM) Peak Hour Traffic Volume

* No Traffic Data

FIGURE 18-12

CLEARWATER Program

Cumulative Base Plus Alternative 3 (Project) Only (2019) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010

CEQA Impact Determination

Construction and operation of Alternative 3 (Project) would not conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 3 (Project) would not conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact TRT-2. Would Alternative 3 (Project) conflict with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis
There are six CMP arterial monitoring stations in the vicinity of the JWPCP West and Angels Gate shaft sites.

- Western Avenue/Pacific Coast Highway
- Figueroa Street/Pacific Coast Highway (study intersection 9)
- Alameda Street/Pacific Coast Highway
- Western Avenue/Toscanini Drive

- Gaffey Street/9th Street (study intersection 14)
- Western Avenue/9th Street (study intersection 17)

As shown on Figure 18-11, Alternative 3 (Project) would add approximately 63 trips to the Gaffey Street/9th Street intersection in the AM and PM peak hours. These added trips would result in an incremental change in V/C of less than 0.020, as shown in Table 18-26. Therefore, there would be no impact at this location. This element would add fewer than 50 peak hour trips to Figueroa Street/Pacific Coast Highway and Western Avenue/9th Street and is not expected to add enough new traffic to exceed the arterial analysis criteria of 50 vehicle trips at the three locations that were not fully analyzed under Impact TRT-1. In addition, construction-related trips would be of limited duration. Based on these considerations, construction-related traffic would be less than significant.

A regional analysis was conducted to quantify potential temporary impacts on the regional freeway system in the vicinity of Alternative 3 (Project), including segments of I-110 and I-710. Three freeway locations were identified for analysis.

- Route 110, at post mile 2.77, at Wilmington (CMP freeway monitoring station)
- Route 110, at post mile 7.016, at Carson Street
- Route 710, at post mile 7.60, at Willow Street (CMP freeway monitoring station)

Existing freeway mainline traffic volumes were obtained from 2008 Traffic Volumes on California State Highways (California Department of Transportation 2008) for the three selected mainline freeway locations. Peak hour volumes by direction were derived by applying directional and peak hour factors in 2008 Traffic Volumes on California State Highways, and freeway LOS was analyzed using the D/C methodology. A growth rate of 0.65 percent per year was applied to these traffic volumes to estimate 2010 existing base conditions for these freeway segments. As discussed in Section 18.4.1, because the current CMP projects a slightly lower growth rate for the study area (0.51 percent per year), the analysis presented here is conservative in the assumption regarding ambient traffic growth. The D/C ratios were calculated for each freeway segment using a capacity value of 2,000 vehicles per hour per freeway mainline lane for freeway mixed-flow lanes according to the Highway Capacity Manual. Freeway segment LOS was determined based on V/C ratios and the definitions shown in Table 18-17. The existing D/C ratios during the morning and afternoon peak hours at both the CMP freeway monitoring locations and other selected highway segments are shown in Table 18-27. The analysis indicates that the study segments along I-710 and I-110 at Carson Street currently operate at LOS F during the AM and PM peak hours.

Table 18-27. Existing and Future Freeway Volumes and Levels of Service Alternative 3 (Project)

				Existing (2010)			Cumulative Base (2019)				Future (2019) Alternative 3 (Project)				
Freeway Segments	**Direction**	**# of Lanes**	**Capacity**	**Peak Hour Volume[a]**	**D/C Ratio**	**LOS**	**Peak Hour Volume**	**D/C Ratio**	**LOS**	**Alternative 3 Peak Hour Trips**	**Peak Hour Volume**	**D/C Ratio**	**LOS**	**Project-related D/C Change**	**Significant Impact**
AM Peak Hour															
Harbor Freeway (I-110)															
@ Wilmington, south of C Street – Mile 2.77[b]	NB	4	8,000	7,450	0.931	E	7,886	0.986	E	4	7,890	0.986	E	0.000	No
	SB	4	8,000	5,491	0.686	C	5,812	0.727	C	31	5,843	0.730	C	0.004	No
@ Carson Street – Mile 7.016	NB	4	8,000	9,150	1.144	F(0)	9,685	1.211	F(0)	52	9,737	1.217	F(0)	0.006	No
	SB	4	8,000	7,039	0.880	D	7,451	0.931	E	77	7,528	0.941	E	0.010	No
Long Beach Freeway (I-710)															
North of Junction Route 1 (PCH), Willow Street – Mile 7.60[b]	NB	3	6,000	6,128	1.021	F(0)	6,486	1.081	F(0)	0	6,486	1.081	F(0)	0.000	No
	SB	3	6,000	6,408	1.068	F(0)	6,783	1.131	F(0)	22	6,805	1.134	F(0)	0.004	No
PM Peak Hour															
Harbor Freeway (I-110)															
@ Wilmington, south of C Street – Mile 2.77[b]	NB	4	8,000	5,014	0.627	C	5,307	0.663	C	31	5,338	0.667	C	0.004	No
	SB	4	8,000	8,104	1.013	F(0)	8,578	1.072	F(0)	4	8,582	1.073	F(0)	0.001	No
@ Carson Street – Mile 7.016	NB	4	8,000	6,369	0.796	D	6,742	0.843	D	79	6,821	0.853	D	0.010	No
	SB	4	8,000	8,104	1.013	F(0)	8,578	1.072	F(0)	50	8,628	1.079	F(0)	0.006	No
Long Beach Freeway (I-710)															
North of Junction Route 1 (PCH), Willow Street – Mile 7.60[b]	NB	3	6,000	5,807	0.968	E	6,147	1.025	F(0)	22	6,169	1.028	F(0)	0.004	No
	SB	3	6,000	6,078	1.013	F(0)	6,434	1.072	F(0)	0	6,434	1.072	F(0)	0.000	No

[a] Caltrans Data – factored from 2008 to 2010 conditions

[b] The post miles of the count data are in close proximity to the two identified CMP freeway monitoring stations, including I-110 south of C Street (at post mile 2.77) and I-710 south of Willow Street (at post mile 7.887).

The methodology used to develop forecasts of future year 2019 freeway volumes with and without the addition of trips added by Alternative 3 (Project) is similar to that used for the analyzed intersections. The year 2019 cumulative base freeway traffic volumes were developed by factoring the baseline volumes by 0.65 percent per year to reflect cumulative growth. The year 2019 peak hour traffic volumes and projected D/C ratio for the analyzed freeway segments are presented in Table 18-27. The trip distribution patterns described in Section 18.4.1 were used for this analysis to identify freeway locations at which the project would temporarily add considerable new trips.

The projected D/C ratios under 2019 cumulative plus Alternative 3 (Project) conditions and the incremental increase are presented in Table 18-27. The significant impact criteria established by the CMP provide that a project would generate significant regional freeway impacts if the projected LOS is LOS F and the increase in D/C ratio caused by the project traffic is equal to or more than 0.02. As shown, Alternative 3 (Project) would not have any significant impacts on the adjacent freeway segments during either the AM or PM peak hours.

The methodology described in the CMP was used to estimate the number of additional transit trips that may occur during construction. This methodology states that transit trips may be approximately 3.5 percent of vehicle trips. Applying this estimate to the estimated construction worker trips, it is estimated that up to six new transit person trips (three inbound and three outbound) may occur near each of the construction sites. Each shaft site is served by at least one of the transit lines described in Section 18.4.1. At this level of increase, impacts on the regional transit system would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

In the operational phase, the JWPCP West and Angels Gate shaft sites would be expected to generate negligible traffic, limited to a few trips per month for normal inspections and maintenance. Based on the CMP impact criteria summarized in Section 18.4.1, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation of Alternative 3 (Project) would not conflict with an applicable congestion management program, including but not limited to LOS standards established by the county congestion management agency for designated roads or highways. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction and operation of Alternative 3 (Project) would not conflict with an applicable congestion management program, including but not limited to LOS standards established by the county congestion management agency for designated roads or highways. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact TRT-4. Would Alternative 3 (Project) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

Because all construction activities would be located on site, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would be located on site, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 3 (Project) would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). There would be no impacts under CEQA.

Mitigation
No mitigation is required.

Residual Impacts
There would be no impacts.

NEPA Impact Determination
Construction and operation of Alternative 3 (Project) would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
There would be no impacts.

Impact TRT-5. Would Alternative 3 (Project) result in inadequate emergency access?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. Because all operation and maintenance activities would occur underground, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. Because all operation and maintenance activities would occur underground, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

Because all construction activities would be located on site, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all construction activities would be located on site, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 3 (Project) would not result in inadequate emergency access. There would be no impacts under CEQA.

Mitigation
No mitigation is required.

Residual Impacts
There would be no impacts.

NEPA Impact Determination
Construction and operation of Alternative 3 (Project) would not result in inadequate emergency access. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
There would be no impacts.

Impact TRT-6. Would Alternative 3 (Project) conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. Because all operation and maintenance activities would occur underground, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. Because all operation and maintenance activities would occur underground, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

Because all construction activities would be located on site, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

Because all operation and maintenance activities would be located on site, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 3 (Project) would not conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities. There would be no impacts under CEQA.

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

NEPA Impact Determination

Construction and operation of Alternative 3 (Project) would not conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

18.4.5.3 Impact Summary – Alternative 3

Impacts on terrestrial transportation and traffic for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 18-19. Impacts analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 18-28. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 18-28. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRT-1. Would Alternative 3 (Project) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 18-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation

Table 18-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-2. Would Alternative 3 (Project) conflict with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 18-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 18-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRT-4. Would Alternative 3 (Project) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Angels Gate	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 18-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Rise/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-5. Would Alternative 3 (Project) result in inadequate emergency access?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 18-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Angels Gate	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 18-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRT-6. Would Alternative 3 (Project) conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Angels Gate	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

Table 18-28 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Riser/Diffuser Area				
PV Shelf	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

18.4.6 Alternative 4 (Recommended Alternative)

18.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

18.4.6.2 Project

The impacts for the shaft site at JWPCP West for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years. The construction impacts for the rehabilitation of the existing ocean outfalls would be the same as for Alternative 1 (Project). Operational impacts would be the same as baseline conditions; therefore, there would be no operational impacts for the existing ocean outfalls under Alternative 4 (Project).

Impact TRT-1. Would Alternative 4 (Project) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Site – Royal Palms

Construction

CEQA Analysis

Assumptions made to determine future 2019 baseline conditions for this shaft site are summarized in Section 18.4.1. The location of the study intersections for Alternative 4 (Project) are shown on Figure 18-10, and LOS calculations for study intersections surrounding this shaft site are presented in Table 18-10. As indicated in the table, the five study intersections surrounding the Royal Palms shaft site are projected to operate at LOS D or better during the AM and PM peak hours under 2019 baseline conditions.

During the various construction phases, hauling of supplies and disposal of excavated soil by truck and travel by construction workers and employees would generate traffic over the surrounding regional and local transportation system. The construction-related traffic impact analysis was based on the most intense period (worst-case scenario) of construction between 2014 and 2021. Peak construction activity

would occur during 2019. During construction of this shaft site, which would last approximately 6 to 9 months, 20 worker and 160 PCE truck trips (10 inbound worker, 10 outbound worker, 80 inbound PCE truck, 80 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 16 peak hour PCE truck trips (10 inbound worker, 8 inbound PCE truck, and 8 outbound PCE truck in the AM peak hour, and 10 outbound worker, 8 inbound PCE truck, and 8 outbound PCE truck in the PM peak hour). During manifold construction, which would last approximately 18 months, 20 worker and 160 PCE truck trips (10 inbound worker, 10 outbound worker, 80 inbound PCE truck, 80 outbound PCE truck) are estimated per day, including 10 peak hour worker trips and 16 peak hour PCE truck trips (10 inbound worker, 8 inbound PCE truck, and 8 outbound PCE truck in the AM peak hour, and 10 outbound worker trips, 8 inbound PCE truck, and 8 outbound PCE truck in the PM peak hour). Trip generation used for this analysis is summarized in Table 18-29 through Table 18-32.

Table 18-29. Alternative 4 (Project) Construction Truck PCE Trip Generation Estimates by Location and by Phase Assuming Maximum Truck Trips

Site and Phase	Duration (Months)	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
JWPCP West Shaft								
Shaft Construction	10–12	260[a]	12	14	26	12	14	26
Onshore Tunneling	48[b]	444[c]	20	24	44	20	24	44
Shaft Covering and Site Restoration	2–5	40	2	2	4	2	2	4
Royal Palms Shaft								
Shaft Construction	6–9	160[d]	8	8	16	8	8	16
Manifold Construction	18	160[e]	8	8	16	8	8	16
Existing Ocean Outfalls Rehabilitation	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A

PCE factor of 2.0 has been applied to these truck trips for traffic impact analysis.

[a] Estimated 65 truck round trips (130 total one-way) per day during shaft construction, which would last for 10 to 12 months.

[b] Assumed onshore tunneling rate of 36,000 feet at 35 feet per day and 30 working days per month.

[c] Number of truck trips for maximum production during onshore tunneling (up to 95 round trips for excavated material disposal and 16 round-trip deliveries; average activity is estimated to be 48 round trips for excavated material disposal and 9 round-trip deliveries).

[d] Estimated 40 truck round trips (80 total one-way) per day during shaft construction, which would last for 6 to 9 months.

[e] Estimated 40 truck round trips (80 total one-way) per day during manifold construction, which would last for 18 months.

Source: Truck and worker trip estimates are based on information in the JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) and additional information.

Table 18-30. Alternative 4 (Project) Construction Worker Trip Generation Estimates by Location and Phase Assuming Maximum Worker Trips

Site and Phase	Duration (Months)	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
JWPCP West Shaft								
Shaft Construction	10–12	20[a]	10	0	10	0	10	10
Onshore Tunneling	48[b]	240[c]	40	40	80	40	40	80
Shaft Covering and Site Restoration	2–5	20[d]	10	0	10	0	10	10
Royal Palms Shaft								
Shaft Construction	6–9	20[a]	10	0	10	0	10	10
Manifold Construction	18	20[e]	10	0	10	0	10	10
Existing Ocean Outfalls Rehabilitation	9	20[f]	10	0	10	0	10	10

Table 18-30 (Continued)

Site and Phase	Duration (Months)	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total

[a] Assumed a 10-hour work shift, 5 days per week. Approximately 10 workers would be needed to construct each shaft.

[b] Assumed onshore tunneling rate of 36,000 feet at 35 feet per day and 30 working days per month.

[c] 35–40 workers needed during tunnel construction, with shift changes occurring in the peak hour. A maximum assumption of 40 workers was used for 3- to 8-hour shifts.

[d] Assumed a 10-hour work shift, 5 days per week. Approximately 10 workers would be needed to decommission each shaft.

[e] Estimated 5–10 workers per day for one 10-hour shift, 5 days per week, for approximately 18 months. It is assumed that activity during demobilization phases would be of similar or lower intensity.

[f] Assumed a 10-hour work shift, 5 days per week. Approximately 8–10 workers would be needed for existing ocean outfalls rehabilitation.

Source: Truck and worker trip estimates are based on information in the JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) and additional information.

Table 18-31. Alternative 4 (Project) Total PCE Construction Trip Generation Estimates by Location and Phase Assuming Maximum Truck and Worker Trips

Site and Phase	Duration (Months)	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
JWPCP West Shaft								
Shaft Construction	10–12	280	22	14	36	12	24	36
Onshore Tunneling	48[a]	684	60	64	124	60	64	124
Shaft Restoration	2–5	60	12	2	14	2	12	14
Royal Palms Shaft								
Shaft Construction	6–9	180	18	8	26	8	18	26
Manifold Construction	18	180	18	8	26	8	18	26
Existing Ocean Outfalls Rehabilitation	9	20	10	0	10	0	10	10

[a] Assumed onshore tunneling rate of 36,000 feet at 35 feet per day and 30 working days per month.

Source: Truck and worker trip estimates are based on information in the JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) and additional information.

Table 18-32. Alternative 4 (Project) Total PCE Peak Hour Construction Trip Generation per Phase per Quarter Assuming Maximum Truck and Worker Trips

	2015				2016				2017				2018				2019				2020				2021				2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Submittals and TBM Fabrication																																
JWPCP West Shaft Construction	36	36	36	36																												
Site Preparation/Assemble TBM																																
Tunneling							124	124	124	124	124	124	124	124	124	124	124	124	124	124	124	124										
Royal Palms Shaft Construction																			26	26												
Royal Palms Shaft Use																					26	26	26	26	26	26						
Existing Ocean Outfalls Rehabilitation																						10	10	10								
Demobilization																																
Total Trips per Quarter	36	36	36	36	0	0	124	124	124	124	124	124	124	124	124	124	124	124	150	150	**150**	**160**	36	36	26	26	0	0	0	0	0	0

Construction worker trips for this shaft site were distributed onto the surrounding street network based on the general distribution described in Section 18.4.1. Truck trips were assumed to travel on Gaffey Street and Western Avenue to access I-110, along the most direct route to the regional freeway system. The maximum estimated peak hour trips at the study intersections to and from this shaft site during construction are shown on Figure 18-13. The total projected peak hour traffic volumes at the study intersections are shown on Figure 18-14. Future 2019 LOS conditions during the construction period and an assessment of potential temporary adverse impacts are presented in Table 18-33.

Table 18-33. Alternative 4 (Project) Future (2019) Intersection Level of Service Analysis and Impact Determination

	Intersection	Peak Hour	Cumulative Baseline 2019		Cumulative Plus Alternative 4 (Project) 2019		Project Increase in V/C	Adverse Project Impact
			V/C or Delay	LOS	V/C or Delay	LOS		
Study Intersections in the Vicinity of the JWPCP West Shaft Site								
1	Vermont Avenue	AM	0.992	E	0.993	E	0.001	No
	Sepulveda Boulevard	PM	0.981	E	0.982	E	0.001	No
2	SB I-110 Off-Ramp	AM	0.910	E	0.911	E	0.001	No
	Sepulveda Boulevard	PM	0.865	D	0.866	D	0.001	No
3	NB I-110 Off-Ramp	AM	0.746	C	0.755	C	0.009	No
	Sepulveda Boulevard	PM	0.736	C	0.746	C	0.010	No
4	Figueroa Street	AM	0.746	C	0.775	C	0.029	No
	Sepulveda Boulevard	PM	0.766	C	0.768	C	0.002	No
5	Main Street	AM	0.717	C	0.719	C	0.002	No
	Sepulveda Boulevard	PM	0.819	D	0.821	D	0.002	No
6	Vermont Avenue	AM	1.031	F	1.032	F	0.001	No
	Lomita Boulevard	PM	0.858	D	0.859	D	0.001	No
7	Figueroa Street	AM	0.787	C	0.788	C	0.001	No
	Lomita Boulevard	PM	0.724	C	0.741	C	0.017	No
8	Main Street/Wilmington Boulevard	AM	0.564	A	0.565	A	0.001	No
	Lomita Boulevard	PM	0.557	A	0.557	A	0.000	No
9	Figueroa Street	AM	0.958	E	0.962	E	0.004	No
	Pacific Coast Highway[a]	PM	0.887	D	0.892	D	0.005	No
Study Intersections in the Vicinity of the Royal Palms Shaft Site								
13	Gaffey Street	AM	0.551	A	0.555	A	0.004	No
	I-110 Ramps[a]	PM	0.689	B	0.691	B	0.002	No
14	Gaffey Street	AM	0.793	C	0.797	C	0.004	No
	9th Street[a]	PM	0.791	C	0.803	D	0.012	No
15	Gaffey Street	AM	8.500	A	8.500	A	--	No
	Paseo Del Mar[b]	PM	9.400	A	9.400	A	--	No
16	Western Avenue	AM	11.500	A	11.700	B	--	No
	Paseo Del Mar[c]	PM	12.200	A	12.400	B	--	No
17	Western Avenue	AM	0.564	A	0.565	A	0.001	No
	9th Street[a]	PM	0.593	A	0.598	A	0.005	No

Table 18-33 (Continued)

Intersection	Peak Hour	Cumulative Baseline 2019		Cumulative Plus Alternative 4 (Project) 2019		Project Increase in V/C	Adverse Project Impact
		V/C or Delay	LOS	V/C or Delay	LOS		

[a] Intersection is assumed to be operating under ATSAC and ATCS system in the future. Per LADOT guidelines, a 10 percent capacity credit has been taken at intersections operating with ATSAC/ATCS systems.

[b] Intersection is a four-way stop-controlled intersection. LOS is based on 2000 HCM four-way stop method. Average delay of the intersection is reported.

[c] Intersection is a one-way stop-controlled intersection. LOS is based on 2000 HCM unsignalized method. Worst approach delay of the intersection is reported.

Based on this analysis, the additional construction-related traffic associated with the Royal Palms shaft site would not significantly impact the five study intersections in its vicinity. Therefore, impacts would be less than significant.[2]

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

Once the tunnel construction is complete, the shaft would be capped with a removable cover for future access to support operations and maintenance of the tunnel. In the operational phase of this project element, the Royal Palms shaft site would be expected to generate negligible traffic, limited to a few trips per month for normal inspections and maintenance. At this level of activity, impacts would be less than significant.

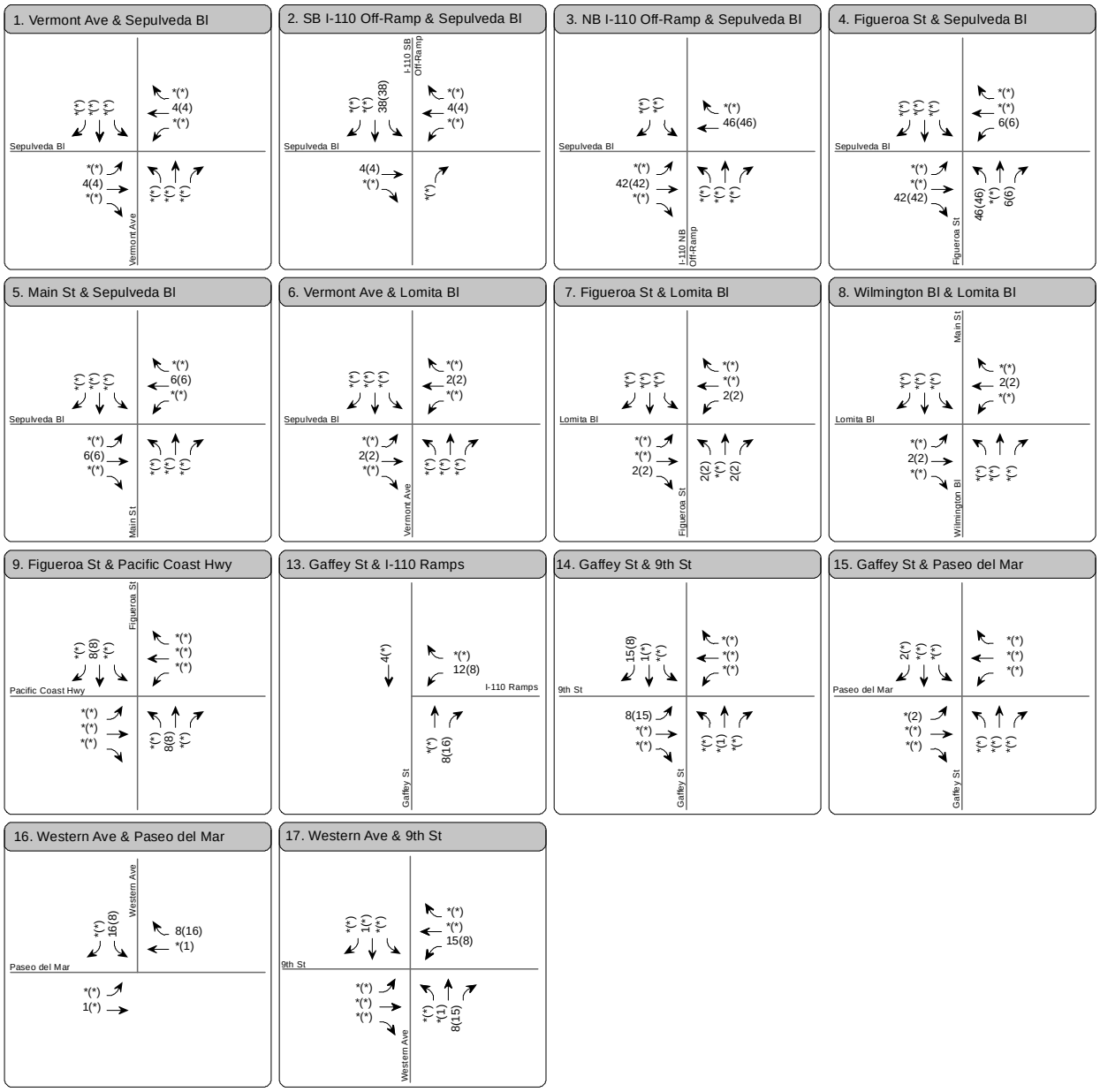
NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation of Alternative 4 (Project) would not conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system,

[2] Since the time of the project-level traffic analysis of Alternative 4, there was a landslide east of the Royal Palms shaft site that led the city of Los Angeles to close a portion of Paseo Del Mar to through traffic for an indeterminate period. The closure to motorized traffic of the roadway link between Western Avenue and Weymouth Avenue has resulted in localized traffic patterns that differ from those that prevailed when the baseline traffic counts used in the original analysis were collected. Because it is unknown whether this roadway segment would be reopened by the time of construction at the Royal Palms shaft site, an additional traffic analysis was performed to determine whether construction at the shaft site would result in different traffic impacts if Paseo Del Mar remained closed. This additional traffic analysis is included as Appendix 18-D. The analysis concluded that the construction traffic impacts with Paseo Del Mar closed would be consistent with the impacts in the original traffic analysis, and that the impacts at the analyzed intersections would be less than significant. The increase in traffic from the project with Paseo Del Mar closed would not exceed the city of Los Angeles' established thresholds of significance.



LEGEND

A M(PM) Peak Hour Traffic Volume

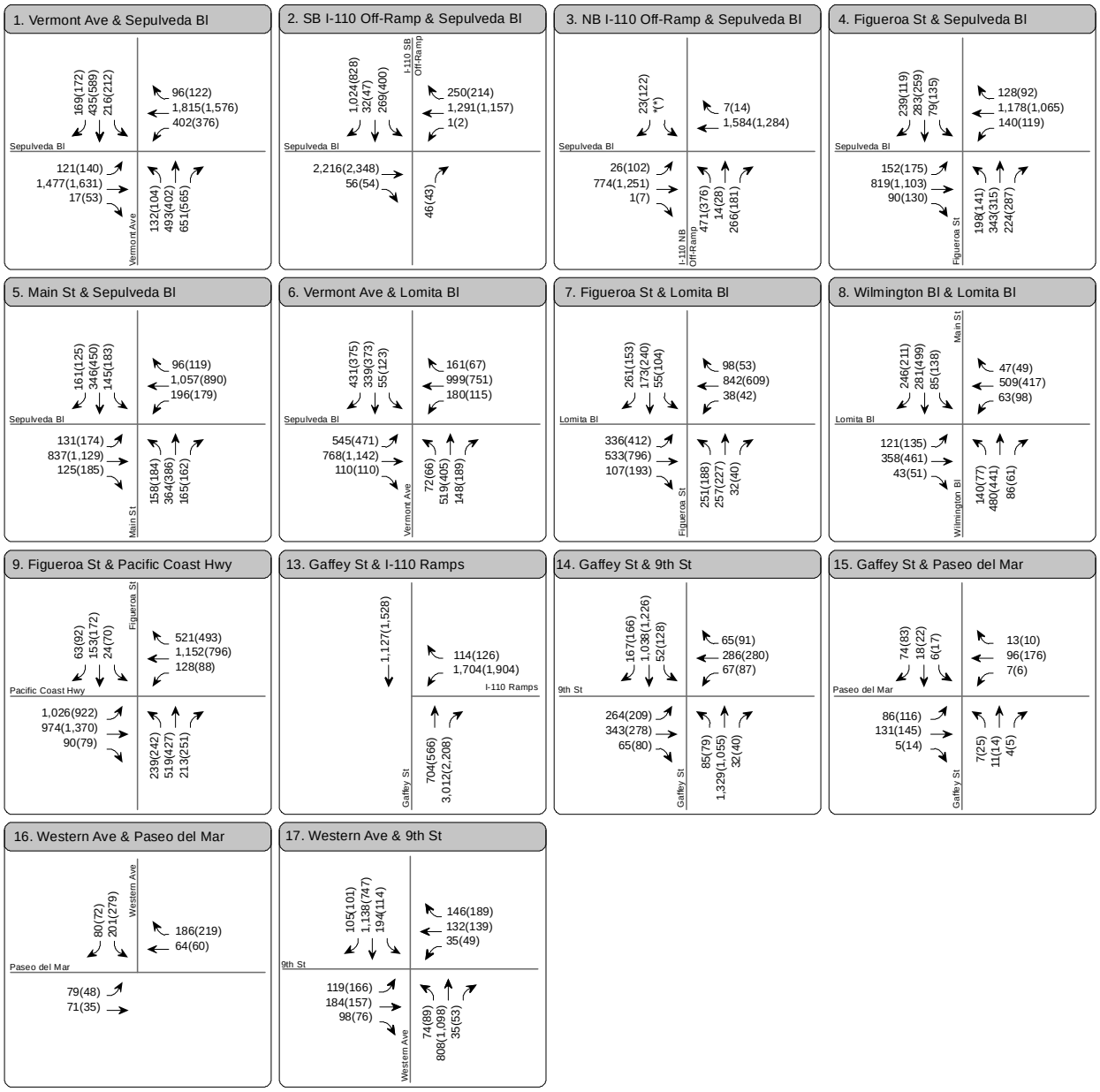
* No Traffic Data

FIGURE 18-13

CLEARWATER Program

Alternative 4 (Project) Only (2019)
Peak Hour Traffic Volumes

Source: Fehr & Peers 2010



LEGEND

A M(PM) Peak Hour Traffic Volume

* No Traffic Data

FIGURE 18-14

CLEARWATER Program

Cumulative Base Plus Alternative 4 (Project) Only (2019) Peak Hour Traffic Volumes

Source: Fehr & Peers 2010

taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction and operation of Alternative 4 (Project) would not conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact TRT-2. Would Alternative 4 (Project) conflict with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in less than significant impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Sites – JWPCP West and Royal Palms

Construction

CEQA Analysis

There are six CMP arterial monitoring stations in the vicinity of the JWPCP West and Royal Palms shaft sites.

- Western Avenue/Pacific Coast Highway
- Figueroa Street/Pacific Coast Highway (study intersection 9)
- Alameda Street/Pacific Coast Highway
- Western Avenue/Toscanini Drive
- Gaffey Street/9th Street (study intersection 14)
- Western Avenue/9th Street (study intersection 17)

As shown on Figure 18-14, Alternative 4 (Project) would add approximately 41 trips to the Gaffey Street/9th Street intersection in the AM and PM peak hours. These added trips would result in an incremental change in V/C of 0.022 at LOS D in the PM peak hour, as shown in Table 18-33. This element would add fewer than 50 peak hour trips to Figueroa Street/Pacific Coast Highway and Western Avenue/9th Street and is not expected to add enough new traffic to exceed the arterial analysis criteria of 50 vehicle trips at the three locations that were not fully analyzed under Impact TRT-1. In addition, construction-related trips would be of limited duration. Based on these considerations, construction-related traffic impacts on the CMP system would be less than significant.

A regional analysis was conducted to quantify potential temporary impacts on the regional freeway system in the vicinity of Alternative 4 (Project), including segments of I-110 and I-710. Three freeway locations were identified for analysis.

- Route 110, at post mile 2.77, at Wilmington (CMP freeway monitoring station)
- Route 110, at post mile 7.016, at Carson Street
- Route 710, at post mile 7.60, at Willow Street (CMP freeway monitoring station)

Existing freeway mainline traffic volumes were obtained from 2008 Traffic Volumes on California State Highways (California Department of Transportation 2008) for the three selected mainline freeway locations. Peak hour volumes by direction were derived by applying directional and peak hour factors in 2008 Traffic Volumes on California State Highways, and freeway LOS was analyzed using the

D/C methodology. A growth rate of 0.65 percent per year was applied to these traffic volumes to estimate 2010 existing base conditions for these freeway segments. As discussed in Section 18.4.1, because the current CMP projects a slightly lower growth rate for the study area (0.51 percent per year), the analysis presented here is conservative in the assumption of regarding ambient traffic growth. The D/C ratios were calculated for each freeway segment using a capacity value of 2,000 vehicles per hour per freeway mainline lane for freeway mixed-flow lanes according to the Highway Capacity Manual. Freeway segment LOS was determined based on V/C ratios and the definitions shown in Table 18-17. The existing D/C ratios during the morning and afternoon peak hours at both the CMP freeway monitoring locations and other selected highway segments are shown in Table 18-34. The analysis indicates that the study segments along I-710 and I-110 at Carson Street currently operate at LOS F during the AM and PM peak hours.

Table 18-34. Existing and Future Freeway Volumes and Levels of Service Alternative 4 (Project)

				Existing (2010)			Cumulative Base (2019)				Future (2019) Alternative 4 (Project)				
Freeway Segments	**Direction**	**# of Lanes**	**Capacity**	**Peak Hour Volume[a]**	**D/C Ratio**	**LOS**	**Peak Hour Volume**	**D/C Ratio**	**LOS**	**Alternative 4 (Project) Peak Hour Trips**	**Peak Hour Volume**	**D/C Ratio**	**LOS**	**Project-Related D/C Change**	**Significant Impact**
AM Peak Hour															
Harbor Freeway (I-110)															
@ Wilmington, south of C Street – Mile 2.77[b]	NB	4	8,000	7,450	0.931	E	7,886	0.986	E	8	7,894	0.987	E	0.001	No
	SB	4	8,000	5,491	0.686	C	5,812	0.727	C	12	5,824	0.728	C	0.001	No
@ Carson Street – Mile 7.016	NB	4	8,000	9,150	1.144	F(0)	9,685	1.211	F(0)	50	9,735	1.217	F(0)	0.006	No
	SB	4	8,000	7,039	0.880	D	7,451	0.931	E	50	7,501	0.938	E	0.006	No
Long Beach Freeway (I-710)															
North of Junction Route 1 (PCH), Willow Street – Mile 7.60[b]	NB	3	6,000	6,128	1.021	F(0)	6,486	1.081	F(0)	0	6,486	1.081	F(0)	0.000	No
	SB	3	6,000	6,408	1.068	F(0)	6,783	1.131	F(0)	4	6,787	1.131	F(0)	0.001	No
PM Peak Hour															
Harbor Freeway (I-110)															
@ Wilmington, south of C Street – Mile 2.77[b]	NB	4	8,000	5,014	0.627	C	5,307	0.663	C	12	5,319	0.665	C	0.001	No
	SB	4	8,000	8,104	1.013	F(0)	8,578	1.072	F(0)	8	8,586	1.073	F(0)	0.001	No
@ Carson Street – Mile 7.016	NB	4	8,000	6,369	0.796	D	6,742	0.843	D	54	6,796	0.850	D	0.007	No
	SB	4	8,000	8,104	1.013	F(0)	8,578	1.072	F(0)	46	8,624	1.078	F(0)	0.006	No
Long Beach Freeway (I-710)															
North of Junction Route 1 (PCH), Willow Street – Mile 7.60[b]	NB	3	6,000	5,807	0.968	E	6,147	1.025	F(0)	4	6,151	1.025	F(0)	0.001	No
	SB	3	6,000	6,078	1.013	F(0)	6,434	1.072	F(0)	0	6,434	1.072	F(0)	0.000	No

[a] Caltrans Data - factored from 2008 to 2010 conditions.

[b] The post miles of the count data are in close proximity to the two identified CMP freeway monitoring stations, including I-110 south of C Street at post mile 2.77) and I-710 south of Willow Street (at post mile 7.887).

The methodology used to develop forecasts of future year 2019 freeway volumes with and without the addition of trips added by Alternative 4 (Project) is similar to that used for the analyzed intersections. The year 2019 cumulative base freeway traffic volumes were developed by factoring the baseline volumes by 0.65 percent per year to reflect cumulative growth. The year 2019 peak hour traffic volumes and projected D/C ratio for the analyzed freeway segments are presented in Table 18-34. The trip distribution patterns described in Section 18.4.1 were used for this analysis to identify freeway locations at which the project would temporarily add considerable new trips.

The projected D/C ratios under 2019 cumulative plus Alternative 4 (Project) conditions and the incremental increase are presented in Table 18-34. The significant impact criteria established by the CMP provide that a project would generate significant regional freeway impacts if the projected LOS is LOS F and the increase in D/C ratio caused by the project traffic is equal to or more than 0.02. As shown, Alternative 4 (Project) would not have any significant impacts on the adjacent freeway segments during either the AM or PM peak hours.

The methodology described in the CMP was used to estimate the number of additional transit trips that may occur during construction. This methodology states that transit trips may be approximately 3.5 percent of vehicle trips. Applying this estimate to the estimated construction worker trips, it is estimated that up to six new transit person trips (three inbound and three outbound) may occur near each of the construction sites. Each shaft site is served by at least one of the transit lines described in Section 18.4.1. At this level of increase, impacts on the regional transit system would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Operation

CEQA Analysis

In the operational phase, the JWPCP West and Royal Palms shaft sites would be expected to generate negligible traffic, limited to a few trips per month for normal inspections and maintenance. Based on the CMP impact criteria summarized in Section 18.4.1, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction and operation of Alternative 4 (Project) would not conflict with an applicable congestion management program, including but not limited to LOS standards established by the county congestion management agency for designated roads or highways. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction and operation of Alternative 4 (Project) would not conflict with an applicable congestion management program, including but not limited to LOS standards established by the county congestion management agency for designated roads or highways. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact TRT-4. Would Alternative 4 (Project) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. No additional trips to the surrounding roadway network as a result of the tunnel alignment are anticipated during operation. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Site – Royal Palms

Construction

CEQA Analysis
Because all construction activities would be located on the Royal Palms shaft site, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
Because all operation and maintenance activities would be located on the Royal Palms shaft site, no changes to the existing roadway network or any public rights-of-way would occur. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Construction and operation of Alternative 4 (Project) would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). There would be no impacts under CEQA.

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

NEPA Impact Determination
Construction and operation of Alternative 4 (Project) would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

Impact TRT-5. Would Alternative 4 (Project) result in inadequate emergency access?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis
All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. Because all operation and maintenance activities would occur underground, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Site – Royal Palms

Construction

CEQA Analysis
Because all construction activities would be located on the Royal Palms shaft site, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
Because all operation and maintenance activities would be located on the Royal Palms shaft site, emergency access would not be obstructed. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination

Construction and operation of Alternative 4 (Project) would not result in inadequate emergency access. There would be no impacts under CEQA.

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

NEPA Impact Determination

Construction and operation of Alternative 4 (Project) would not result in inadequate emergency access. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

No impacts would occur.

Impact TRT-6. Would Alternative 4 (Project) conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

All traffic associated with the removal of excavated material would occur at the shaft sites and will be discussed under the affected locations. Construction of the tunnel alignment would result in no impacts as discussed under the analysis for the shaft sites.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis

All impacts associated with operation of the tunnel would occur at the shaft sites and will be discussed under the affected locations. Because all operation and maintenance activities would occur underground, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Shaft Site – Royal Palms

Construction

CEQA Analysis
Because all construction activities would be located on the Royal Palms shaft site, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Pedestrian and bicycle access to the adjacent Royal Palms State Beach would be maintained. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

Operation

CEQA Analysis
Because all operation and maintenance activities would be located on the Royal Palms shaft site, no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Therefore, there would be no impacts.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis. There would be no impacts under NEPA.

CEQA Impact Determination
Construction and operation of Alternative 4 (Project) would not conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities. There would be no impacts under CEQA.

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

NEPA Impact Determination
Construction and operation of Alternative 4 (Project) would not conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities. There would be no impacts under NEPA with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
No impacts would occur.

18.4.6.3 Impact Summary – Alternative 4

Impacts on terrestrial transportation and traffic, which are the same as Alternative 1 (Program), are summarized in Table 18-19. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 18-35. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 18-35. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRT-1. Would Alternative 4 (Project) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation

Table 18-35 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-2. Would Alternative 4 (Project) conflict with an applicable congestion management program, including but not limited to level of service standards established by the county congestion management agency for designated roads or highways?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation

Table 18-35 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-4. Would Alternative 4 (Project) substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation

Table 18-35 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Royal Palms	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-5. Would Alternative 4 (Project) result in inadequate emergency access?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation

Table 18-35 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Royal Palms	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Impact TRT-6. Would Alternative 4 (Project) conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decreases the performance of safety of such facilities?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Shaft Site				
JWPCP West	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation

Table 18-35 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Royal Palms	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA No Impact During Construction	N/A	No mitigation is required.	CEQA No Impact During Construction
	NEPA No Impact During Construction	N/A	No mitigation is required.	NEPA No Impact During Construction
	CEQA No Impact During Operation	N/A	No mitigation is required.	CEQA No Impact During Operation
	NEPA No Impact During Operation	N/A	No mitigation is required.	NEPA No Impact During Operation

18.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an EIR must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the Joint Outfall System (JOS) in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

18.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the SJCWRP, WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for

Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994).

18.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. The emergency discharges would not result in any significant project-level impacts on terrestrial transportation and traffic. Additionally, because no construction would occur under this alternative, there would be no construction impacts as a result of Alternative 5 (Project). Operation would remain as it is under existing conditions and, therefore, would result in no additional trips to the surrounding transportation system, nor would any changes to the existing roadway network or any public rights-of-way occur. Alternative 5 (Project) would not result in any changes to emergency access, and no bicycle or pedestrian facilities accessible to the public and no public transit stops would be affected. Alternative 5 (Project) would result in no impacts under Impacts TRT-1 through TRT-6.

18.4.7.3 Impact Summary – Alternative 5

Impacts on terrestrial transportation and traffic for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 18-19, excluding process optimization. Note that the mitigation measures for Alternatives 1 through 4 (Program) are not applicable to Alternative 5 (Program). There would be no impacts for Alternative 5 (Project).

18.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.6 and 18.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

18.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

18.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

18.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Impacts for Alternative 6 would be the same as discussed under Alternative 5 (Project); therefore, there would be no impacts on terrestrial transportation and traffic for Alternative 6.

18.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on terrestrial transportation and traffic resulting from the construction and/or operation of program and/or project elements is provided in Table 18-36. Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 18-36. Comparison of Significant Impacts and Mitigation for Terrestrial Transportation and Traffic for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternatives 1, 2, 3, 4, and 5[a] (Program)			
Impact TRT-1. Would Alternative 1 (Program) conflict with an applicable plan, ordinance, or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant elements of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			
SJCWRP – Plant Expansion and Process Optimization; POWRP, LCWRP, LBWRP – Process Optimization; JWPCP – Solids Processing	CEQA Significant Impact During Construction	MM TRT-1. Prepare and implement a construction traffic management plan. The plan will be submitted to the appropriate local agency for review and approval prior to the start of any construction work. This plan will include such elements as the project schedule, the designation of haul routes for construction-related trucks, the location of access to the construction site, designated staging and parking areas for workers and equipment, any driveway turning movement restrictions, any temporary traffic control devices or flagmen, and any travel time restrictions for construction-related traffic to avoid peak travel periods on selected roadways.	CEQA Less Than Significant Impact During Construction

[a] Process optimization would not apply to Alternative 5 (Program). Additionally, all mitigation measures and residual impacts would not apply to Alternative 5 (Program).

Chapter 19
TRANSPORTATION AND TRAFFIC (MARINE)

19.1 Introduction

This chapter describes existing conditions and applicable regulations related to marine transportation surrounding the Port of Los Angeles, discusses potential impacts on marine transportation operation and safety associated with the project elements, and determines the significance of those impacts. There are no program elements that would apply to or have an impact on marine transportation and traffic; therefore, this chapter does not include a discussion of the program. For transportation and traffic impacts associated with the program elements, onshore tunnel alignments, and shaft sites, see Chapter 18.

Marine-based construction activities with potential impacts under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) include dredging near the riser and diffuser areas; transport of offshore tunnel excavated material from the Los Angeles Export Terminal (LAXT) shaft site and dredged material from the riser and diffuser areas to an Ocean Dredged Material Disposal Site (ODMDS); transport of the riser and diffuser; transport of workers from the Port of Los Angeles to the riser and diffuser construction locations; construction of the riser and diffuser; and rehabilitation of the existing ocean outfalls. Operational activities with potential impacts under CEQA and NEPA include marine traffic generated by maintenance of the riser and diffuser on the San Pedro Shelf (SP Shelf).

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the impact analysis for each program element is summarized by alternative in Table 19-1. As shown in the table, none of the program-level elements are analyzed in the Preliminary Screening Analysis or this chapter because they are all located outside the marine environment.

Table 19-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	N/A	
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	N/A	
Process Optimization	X	X	X	X	N/A	N/A	N/A	
WRP Effluent Management	X	X	X	X	X	N/A	N/A	

Table 19-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	N/A	
WRP Effluent Management	X	X	X	X	X	N/A	N/A	
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	N/A	
WRP Effluent Management	X	X	X	X	X	N/A	N/A	
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	N/A	
WRP Effluent Management	X	X	X	X	X	N/A	N/A	
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	N/A	
JWPCP								
Solids Processing	X	X	X	X	X	N/A	N/A	
Biosolids Management	X	X	X	X	X	N/A	N/A	
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 19-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 19.4.7 for a discussion of the No-Project Alternative.
[b] See Section 19.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element carried forward as a project. The location of the marine transportation impact analysis for each project element is summarized by alternative in Table 19-2. As shown in Table 19-2, the onshore tunnel alignments and shaft sites would be located on land and would not influence the marine environment; therefore, they are not discussed in the Preliminary Screening Analysis or this chapter.

Table 19-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	N/A	
Wilmington to SP Shelf (offshore)	X				N/A	N/A	O	C
Wilmington to PV Shelf (onshore)		X			N/A	N/A	N/A	
Wilmington to PV Shelf (offshore)		X			N/A	N/A	O	C
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	N/A	
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	O	C
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	N/A	

Table 19-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Shaft Sites								
JWPCP East	X	X			N/A	N/A	N/A	
JWPCP West			X	X	N/A	N/A	N/A	
TraPac	X	X			N/A	N/A	N/A	
LAXT	X	X			N/A	N/A	N/A	
Southwest Marine	X	X			N/A	N/A	N/A	
Angels Gate			X		N/A	N/A	N/A	
Royal Palms				X	N/A	N/A	N/A	
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	O	C,O
PV Shelf		X	X		N/A	N/A	O	C
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	C

[a] See Section 19.4.7 for a discussion of the No-Project Alternative.
[b] See Section 19.4.8 for a discussion of the No-Federal-Action Alternative
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable.

19.2 Environmental Setting

19.2.1 Regional Setting

The Los Angeles Harbor is located within the Port of Los Angeles in San Pedro Bay. The bay is protected from the open Pacific Ocean by the San Pedro and Middle breakwaters. The opening between these breakwaters is known as Angels Gate, and provides entry to the Port of Los Angeles. Vessel traffic channels have been established in the Los Angeles Harbor, and numerous aids to navigation have been developed. Impacts on marine transportation and traffic associated with project elements would primarily occur within the vicinity of the Port of Los Angeles. Principally, this would include the precautionary area directly outside the Port of Los Angeles, but it would also include the area surrounding the existing ocean outfalls as well as marine vessel traffic lanes from the Port of Los Angeles to potential ocean disposal sites. Therefore, the discussion in this chapter will be limited to these areas.

Numerous vessels, including fishing boats, pleasure vessels, passenger-carrying vessels, tankers, auto carriers, container vessels, dry bulk carriers, cruise ships, and barges, call or reside at the port. Commercial vessels follow vessel traffic lanes established by the United States (U.S.) Coast Guard (USCG) when approaching and leaving the harbor, as depicted on Figure 19-1. Designated traffic lanes converge at the precautionary areas shown on the figure. Vessel traffic, as it approaches, enters, and leaves the port, is described in the following section.

19.2.1.1 Vessel Transportation Safety

Vessel traffic is highly regulated by the USCG Captain of the Port (COTP) and the Marine Exchange of Southern California (Marine Exchange) via the Vessel Traffic Service (VTS). Mariners are required to report their positions to the COTP and the VTS prior to transiting through the port. The VTS monitors

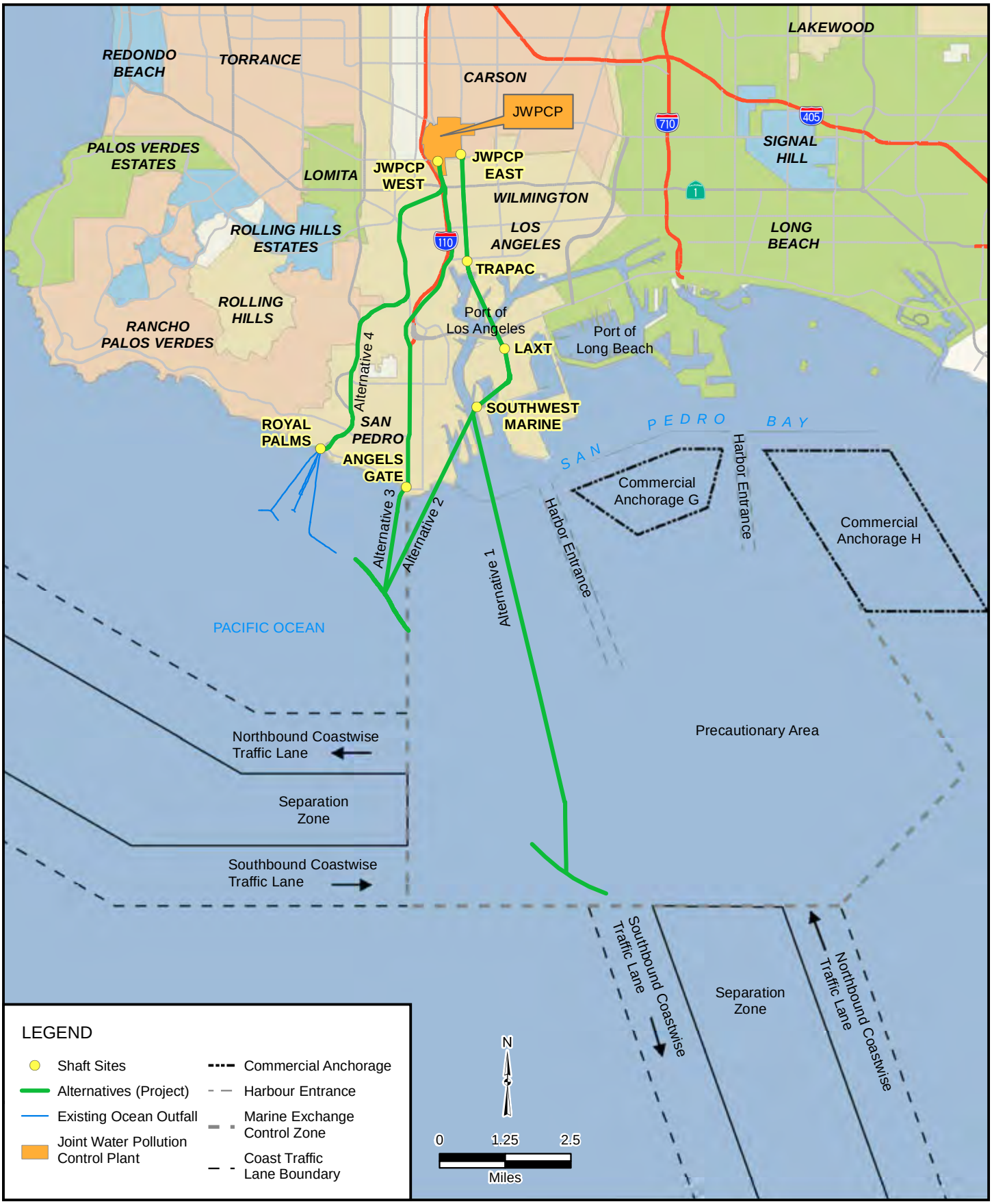


FIGURE 19-1

CLEARWATER Program

Vessel Traffic Lanes Entering and Exiting Port Complex

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

the positions of all inbound/outbound vessels within the precautionary area and the approach corridor traffic lanes as shown on Figure 19-1. Smaller craft, such as yachts and fishing vessels, are not required to participate in the VTS. In the event of scheduling conflicts and/or if vessel occupancy within the port reaches operating capacity, vessels are required to anchor at the commercial anchorages (G and H on Figure 19-1) outside the breakwater until mariners receive COTP authorization to initiate transit into the port.

Several measures are in place to ensure the safety of vessel navigation in the port area. The USCG provides a weekly Local Notice to Mariners (LNM), which describes current navigational issues and construction activities within the region. Restricted navigation areas and routes have been designated to ensure safe vessel navigation and are regulated by various agencies and organizations to ensure navigational safety. These navigation areas, routes, and regulating agencies and organizations are described in this section.

Marine Exchange of Southern California

The Marine Exchange is a voluntary, non-profit organization affiliated with the Los Angeles Chamber of Commerce that monitors, facilitates, and reports on all traffic statistics for the four major ports in Southern California, including the Port of Los Angeles. One of the purposes of the Marine Exchange is to enhance navigation safety in the precautionary area and harbor area of the Port of Los Angeles. Services consist of a coordinating office, specific reporting points, and very high frequency-frequency modulation radio communications used with participating vessels. Vessel traffic channels and numerous aids to navigation (i.e., operating rules and regulations) have also been established for the port. The Marine Exchange also operates the Physical Oceanographic Real Time System (PORTS) as a service to organizations making operational decisions based on oceanographic and meteorological conditions in the vicinity of the port. PORTS collects and disseminates accurate real-time information on tides, visibility, winds, currents, and sea swells to maritime users to assist in the safe and efficient transit of vessels in the port area.

Vessel Traffic Service

The VTS is operated by the Marine Exchange and the USCG to monitor traffic with shore-based radar within both the main approach and departure lanes, including the precautionary area, as well as internal movement within port areas. The VTS uses radar, radio, and visual inputs to collect real-time vessel traffic information and broadcast traffic advisories to assist mariners. Vessels are required to report their positions and destinations to the VTS at certain times and locations, and they may also request information about traffic they could encounter in the precautionary area. The VTS implements the COTP's uniform procedures, including advanced notification to vessel operators, vessel traffic managers, and port pilots identifying the location of dredges, derrick barges, and any associated operational procedures and/or restrictions (e.g., one-way traffic), to ensure safe transit of vessels operating within, to, and from the port complex. In addition, a communication system links the following key operational centers: USCG COTP, VTS, Los Angeles Pilot Station, Long Beach Pilot Station, and the Port of Long Beach Security. This system is used to exchange vessel movement information and safety notices among the various organizations.

Traffic Separation Schemes

A traffic separation scheme is an internationally recognized vessel routing designation that separates opposing flows of vessel traffic into lanes, and includes a zone between lanes where traffic is to be avoided. Traffic separation schemes have been designated to help direct offshore vessel traffic along portions of the California coastline. Vessels are not required to use any designated traffic separation scheme, but failure to use one, if available, would be a major factor for determining liability in the event of a collision. Traffic separation scheme designations are proposed by the USCG, but must be approved

by the International Maritime Organization, which is part of the United Nations. The traffic lanes utilized for traffic separation schemes at the port are shown on Figure 19-1.

Precautionary and Regulated Navigation Areas

A precautionary area is designated in congested areas near the entrance to the port to set speed limits or to establish other safety precautions for ships entering or departing the port. A regulated navigation area (RNA) is defined as a water area within a defined boundary for which federal regulations for vessels navigating within this area have been established under 33 Code of Federal Regulations (CFR) Part 165, Subsection 165.1109. In the case of the port, RNA boundaries match the designated precautionary area. Portions of the precautionary area as an RNA are identified in 33 CFR Part 165, Subsection 165.1152.

The precautionary area for the port is defined by a line that extends south from Point Fermin approximately 7 nautical miles, then due east approximately 7 nautical miles, then northeast for approximately 3 nautical miles, and then back northwest (see Figure 19-1). Ships are required to cruise at speeds of 12 knots or less upon entering the precautionary area. A minimum vessel separation of 0.25 nautical mile is also required in the precautionary area. Vessel traffic within the precautionary area is monitored by the Marine Exchange.

Pilotage

The Port of Los Angeles enforces numerous federal navigation regulations (i.e., port tariffs) within the port. Specifically, all vessels of foreign registry as well as larger U.S. commercial vessels (i.e., greater than 300 gross tons) are required to use a federally licensed pilot when navigating inside the breakwater. Some U.S. flag vessels have a trained and licensed pilot onboard; those vessels are not required to use a pilot while navigating larger vessels through the port. In most circumstances, vessels employ the services of a federally licensed local pilot from the port pilots. In instances where a local pilot is not used, pilots must have a local federal pilot license and receive approval by the USCG COTP prior to entering or departing the port. The port tariffs also require vessels to notify the affected pilot station(s) in situations when a pilot is not needed before entering, leaving, shifting, or moving between the Port of Los Angeles and the Port of Long Beach.

Physical Oceanographic Real Time System

In partnership with the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, California Office of Spill Prevention and Response (OSPR), USCG, and some businesses operating in the Port of Los Angeles, the Marine Exchange operates PORTS to provide crucial information in real time to mariners, oil spill response teams, managers of coastal resources, and others about water levels, currents, salinity, and winds in the port.

The instruments that collect the information are deployed at strategic locations within the port to provide data at critical locations and to allow “now-casting” and forecasting using a mathematical model of the ports’ oceanographic processes (tides, currents, etc.). Data from the sensors are fed into a central collection point; raw data from the sensors are integrated and synthesized into information and analysis products, including graphical displays of PORTS data.

19.2.1.2 Navigational Hazards

Port pilots can easily identify fixed navigational hazards in the port, including breakwaters protecting the outer harbors, anchorage areas, and various wharfs and landmasses that comprise the port complex. These hazards are easily visible by radar and are currently illuminated at night. Two bridges cross the navigation channels of the port. Both bridges have restricted vertical clearances, and one has a restricted horizontal clearance.

Vessels that are waiting to enter the port and moor at a berth can anchor at the commercial anchorages outside the breakwaters. Vessels do not require tug assistance to anchor outside the breakwater. For safety reasons, the VTS will not assign an anchorage in the first row of sites closest to the breakwater to vessels exceeding 656 feet in length.

Vessel Accidents

Although marine safety is thoroughly regulated and managed, accidents do occasionally occur, including allisions (between a moving vessel and a stationary object, including another vessel), collisions (between two moving vessels), and vessel groundings. The number of vessel allisions, collisions, and groundings (ACGs) in the Port of Los Angeles and the Port of Long Beach has ranged between 3 and 12 annually in the 12-year period from 1997 through 2008, with the lowest number occurring in 2008. Based on the data shown in Table 19-3, between 1997 and 2008 there were, on average, 7.4 ACG incidents per year. Each of these accidents was subject to USCG marine casualty investigation, and the subsequent actions taken were targeted at preventing future occurrences.

Table 19-3. Allisions, Collisions, and Groundings – Port of Los Angeles/Port of Long Beach (1997–2008)

	ACG Incidents			
Year	Allisions	Collisions	Groundings	Total
1997	1	3	2	6
1998	1	2	3	6
1999	3	4	2	9
2000	3	2	1	6
2001	4	1	0	5
2002	6	5	0	11
2003	4	2	2	8
2004	6	4	2	12
2005	3	1	0	4
2006	4	0	5	9
2007	3	1	6	10
2008	1	1	1	3

These commercial vessel accidents meet a reportable level defined in 46 CFR 4.05, but do not include commercial fishing vessel or recreational boating incidents.

Source: Harbor Safety Committee 2004; Harbor Safety Committee 2009

Vessels are required by law to report failures of navigational equipment, propulsion, steering, or other vital systems that occur during marine navigation. Marine vessel accidents in San Pedro Bay are reported to the USCG via the COTP office or the COTP representative at the VTS as soon as possible. According to the VTS, approximately 1 in 100 vessels calling at the Port of Los Angeles and the Port of Long Beach experience a mechanical failure during their inbound or outbound transit.

Close Quarters

To avoid vessels passing too close to one another, the VTS documents, reports, and takes action on close quarters situations. VTS close quarters situations are described as vessels passing an object or another vessel closer than 0.25 nautical mile or 500 yards. These incidents usually occur within the precautionary area. No reliable data are available for close quarter incidents outside the VTS area. Normal actions taken in response to close quarters situations include initiating informal USCG investigation, sending letters of concern to owners and/or operators, having the involved vessel master(s) visit the VTS and review the incident, and USCG enforcement boardings. An 11-year history of the number of close

quarters situations is presented in Table 19-4. Because there was a relatively steady amount of commercial transits over that time period, there was a decreasing trend in close quarters incidents.

Table 19-4. Number of VTS-Recorded Close Quarters Incidents (1998–2008)

Year	No. of Close Quarters Incidents
1998	9
1999	5
2000	1
2001	2
2002	6
2003	4
2004	1
2005	0
2006	0
2007	1
2008	1

Sources: Harbor Safety Committee 2004; Harbor Safety Committee 2005; Harbor Safety Committee 2006; Harbor Safety Committee 2007; Harbor Safety Committee 2009

Near Misses

The Harbor Safety Committee defines a near miss as follows:

> A reportable 'Near Miss' is an incident in which a pilot, master or other person in charge of navigating a vessel, successfully takes action of a 'non-routine nature' to avoid a collision with another vessel, structure, or aid to navigation, or grounding of the vessel, or damage to the environment.

The most practical and readily available near miss data can be obtained from VTS reports, which are available from the Los Angeles Harbor Department. The number of near miss incidents is the same as the number of close quarter incidents listed in Table 19-4.

19.2.1.3 Factors Affecting Vessel Traffic Safety

This section summarizes environmental conditions that could impact vessel safety in the Port of Los Angeles area.

Fog

Fog is a well-known weather condition in Southern California. Port-area fog occurs most frequently in April and from September through January, when visibility over the bay is below 0.5 mile for 7 to 10 days per month. Fog at the Port of Los Angeles is mostly a land (radiation) type fog that drifts offshore and worsens in the late night and early morning. Smoke from nearby industrial areas often adds to its thickness and persistence. Along the shore, fog drops visibility to less than 0.5 mile for 3 to 8 days per month from August through April, and is generally at its worst in December (Harbor Safety Committee 2008).

Winds

Wind conditions vary widely, particularly in fall and winter. Winds can be strongest during the period when the Santa Ana winds (prevailing winds from the northeast occurring from October through March) blow. The Santa Ana winds, though infrequent, may be violent. A Santa Ana condition occurs when a

strong high-pressure system resides over the plateau region of Nevada and Utah and generates a northeasterly or easterly wind over Southern California. Aside from weather forecasts, there is little warning of a Santa Ana's onset; good visibility and unusually low humidity often prevail for some hours before it arrives. Shortly before arriving on the coast, the Santa Ana may appear as an approaching dark-brown dust cloud. This positive indication often provides a 10 to 30 minute warning. The Santa Ana wind may come at any time of day and can be reinforced by an early morning land breeze or weakened by an afternoon sea breeze (Harbor Safety Committee 2008a).

Winter storms produce strong winds over San Pedro Bay, particularly southwesterly to northwesterly winds. Winds of 17 knots or greater occur about 1 to 2 percent of the time from November through May. Southwesterly to westerly winds begin to prevail in the spring and last into early fall (Harbor Safety Committee 2008a).

Tides

The mean range of tide is 3.8 feet for the Los Angeles Harbor and the diurnal range is about 5.4 feet. A range of 9 feet may occur at maximum tide (Harbor Safety Committee 2008a).

Currents

The tidal currents follow the axis of the channels within the port and rarely exceed 1 knot. The Los Angeles Harbor is subject to seiche (i.e., seismically induced water waves that surge back and forth in an enclosed basin as a result of earthquakes) and surge, with the most persistent and conspicuous oscillation having about a 1-hour period. Near Reservation Point, the prominent hourly surge causes velocity variations as great as 1 knot. These variations often overcome the lesser tidal current, so that the current ebbs and flows at one-half-hour intervals. The more restricted channel usually causes the surge through the Back Channel to reach a greater velocity at the east end of Terminal Island, rather than west of Reservation Point. In the Back Channel, hourly variation may be 1.5 knots or more. At times, the hourly surge, together with shorter, irregular oscillations, causes a very rapid change in water height and current direction/velocity, which may endanger vessels moored at the piers (Harbor Safety Committee 2008a).

Water Depths

The U.S. Army Corps of Engineers (Corps) maintains the federal channels in the Port of Los Angeles. Water depths are listed in Table 19-5.

Table 19-5. Water Depths Within the Los Angeles Harbor

Channel/Basin	Depth – MLLW (feet)
Main Channel	-53
Turning Basin	-53
West Basin	-53
East Basin	-45
North Channel (Pier 300–400)	-53
North Turning Basin	-81
Approach and Entrance Channels	-81

Channels in the Los Angeles Harbor were last surveyed by the Corps in spring of 2006.
MLLW = mean lower low water
Source: Harbor Safety Committee 2008b

19.2.1.4 Vessel Traffic

The riser and diffuser areas would be located offshore of one of the busiest ports in the world. The Port of Los Angeles is the busiest port in the United States. In 2008, there were a total of 21,600 one-way trips of vessels into the Port of Los Angeles (Corps 2010a)[1]. The largest group of commercial vessels to enter and leave the port is container ships. Increasing cargo volumes in recent years have been accommodated primarily by larger vessels rather than additional vessels. Some of the largest container ships in the world now visit the Port of Los Angeles. Container ships as long as 1,000 feet and over 100,000 tons have visited the port. The largest container ships in the world now exceed 150,000 gross tons and 1,200 feet in length. In most of the port complex, it is possible to operate the largest container ships currently afloat. (Parsons 2011.)

In addition to the commercial cargo traffic previously discussed, the port also serves a small fishing vessel fleet based in Fish Harbor and a wide variety of commercial passenger marine vessels including cruise ships, passenger ferries to Catalina Island, sport fishing tours, whale watching tours, harbor cruises, and private recreational vessels. The Port of Los Angeles is the largest cruise ship terminal on the West Coast. Passenger ferry traffic to Catalina Island offered by Catalina Express varies seasonally with approximately 10 to 15 weekly round-trips to the island during the spring (Catalina Express 2010). In addition, operators conducting sport fishing and whale watching tours offer multiple daily trips, contributing to the substantial amount of small-vessel traffic within the port.

Main Channel

The Los Angeles Main Channel extends northwest from the channel entrance for about 1 mile, then veers north to the Inner Harbor turning basin, as shown on Figure 19-2. The Main Channel is 1,000 feet wide. About 0.6 mile northwest of the breakwater, the supertanker channel leads west from the Main Channel to the deep-draft facilities at Berths 45–50. The Main Channel from the breakwater to the supertanker channel and the supertanker channel are maintained at 53 feet. Water depths of the Main Channel and other nearby channels are shown in Table 19-5.

West Basin

The West Basin extends approximately 1.4 miles northwest of the Main Channel near the Vincent Thomas Bridge, as shown on Figure 19-2. The West Basin is approximately 700 feet wide. Commercial vessel traffic in the West Basin consists mostly of container shipping, with a few tankers and some other marine traffic. Water depths of the West Basin and other nearby channels are shown in Table 19-5.

19.2.2 Program Setting

The program would result in no impacts on marine transportation; therefore, the existing program setting is not discussed.

[1] The Corps defines a *trip* as a vessel movement. For self-propelled vessels, a trip is logged between every point of departure and every point of arrival (e.g., a one-way trip). For loaded barges, a trip is logged from the point of the loading of the barge to the point of unloading of the barge. For empty barges, trips are logged from the point of unloading to the point of loading counting the fleeting areas in between. Some towboat trips and empty barge moves are estimated from a sample to expedite processing and reduce costs. The number of trips also includes vessels engaged in foreign trade. These movements are furnished by U.S. Customs and Boarder Protection. To more accurately reflect the actual traffic patterns (e.g., inbound vs. outbound trip counts), some adjustments are made to the domestic trip counts in the trip tables produced by the Corps (Corps 2011).

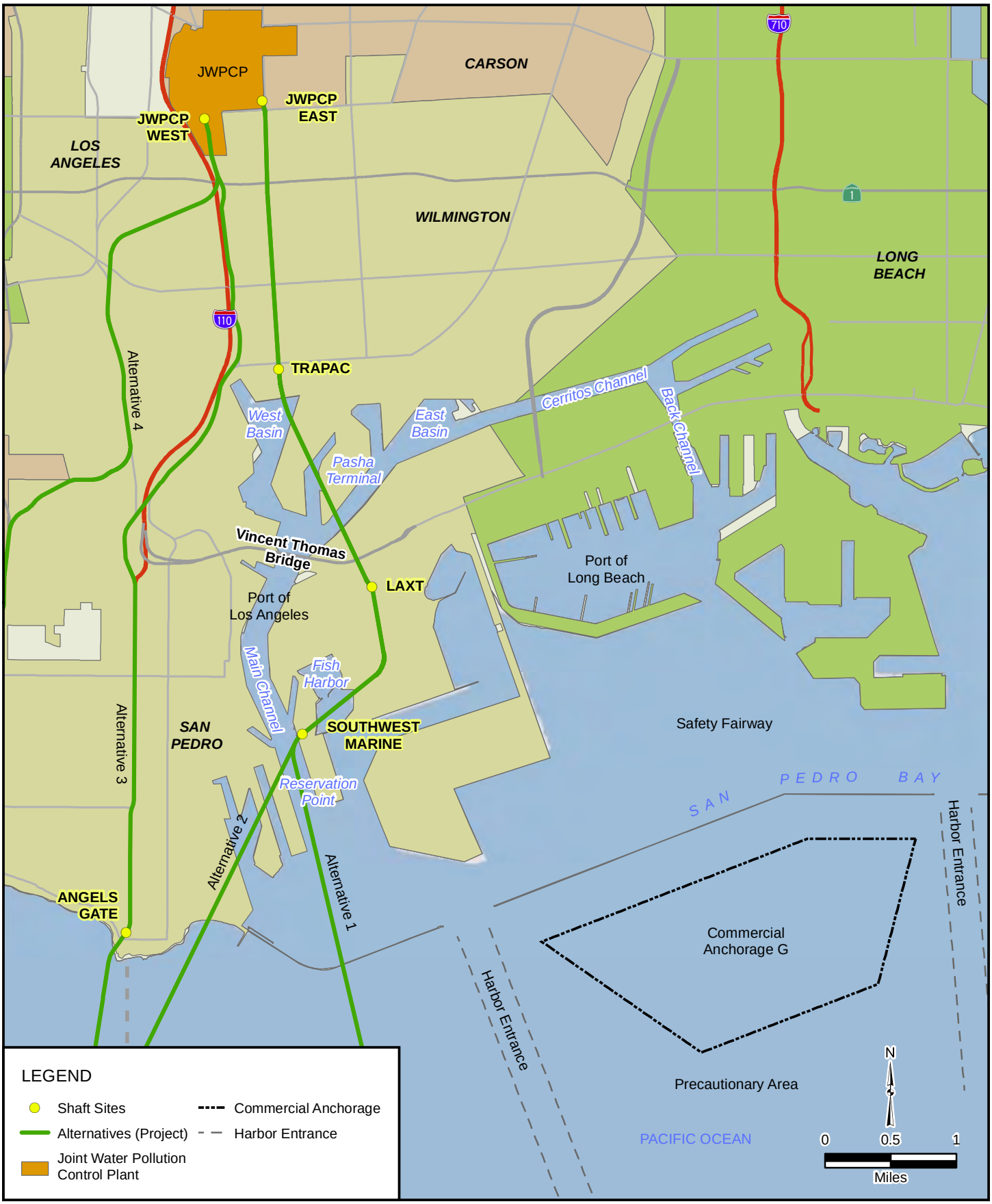


FIGURE 19-2

Port of Los Angeles Vicinity

CLEARWATER Program

Source: Sanitation Districts of Los Angeles County 2011, Thomas Bros. 2011, ESRI 2011

19.2.3 Project Setting

The marine transportation and traffic thresholds of significance only apply to construction and operation of the riser and diffuser project elements, construction of the offshore tunnel alignments, and rehabilitation and maintenance of the existing ocean outfalls; all other project elements will not be addressed in this section.

With respect to offshore tunnel construction and riser and diffuser construction, it is assumed that all non-hazardous excavated material deemed to be suitable for ocean disposal by the Southern California Dredged Material Management Team (SC-DMMT) would be disposed of at an available ODMDS. All hazardous material excavated from the offshore tunnel alignments and all material, non-hazardous and hazardous alike, excavated from shaft sites would be disposed of at appropriate onshore locations. The construction and operation of all other project elements would occur on land and would not otherwise affect marine transportation and traffic. Details of the project are provided in Chapters 1, 2, and 3.

19.3 Regulatory Setting

19.3.1 Federal

A number of federal laws regulate marine structures and movement of vessels. In general, these laws address design and construction standards, operational standards, and spill prevention and cleanup. Regulations to implement these laws are contained primarily in Titles 33 (Navigation and Navigable Waters), 40 (Protection of Environment), and 46 (Shipping) of the CFR.

Since 1789, the federal government has authorized navigation channel improvement projects. The General Survey Act of 1824 established the Corps' role as the agency responsible for the navigation system. Since then, ports have worked in partnership with the Corps to maintain waterside access to port facilities.

19.3.1.1 U.S. Coast Guard

The USCG, through Title 33 (Navigation and Navigable Waters) and Title 46 (Shipping) of the CFR, is the federal agency responsible for vessel inspection, marine terminal operations safety, coordination of federal responses to marine emergencies, enforcement of marine pollution statutes, marine safety (navigation aids), and operation of the National Response Center for spill response.

19.3.1.2 U.S. Army Corps of Engineers

The Corps is responsible for maintaining the navigability of federal channels, through dredging, and maintenance of federal infrastructure, such as jetties and breakwaters. The Corps is also responsible for ensuring navigability of federal waterways through review and issuance of permits under Section 10 of the Rivers and Harbors Act of 1899.

19.3.2 Regional

19.3.2.1 Marine Exchange of Southern California

As described in Section 19.2.1.1, the Marine Exchange is a non-profit organization affiliated with the Los Angeles Chamber of Commerce. The organization is supported by subscriptions from port-related

organizations that recognize the need for such an organization and use its services. This voluntary service is designated to enhance navigation safety in the precautionary area and harbor area of the Port of Los Angeles. The Marine Exchange monitors vessel traffic within the precautionary area and operates PORTS (see Section 19.2.1.1) as a service to those making operational decisions based on oceanographic and meteorological conditions in the vicinity of the Port of Los Angeles.

19.3.2.2 Harbor Safety Committee

The Port of Los Angeles has a Harbor Safety Committee (committee) that is responsible for planning the safe navigation and operation of tankers, barges, and other vessels within San Pedro Bay and approach areas. This committee has been created under the authority of Government Code Section 8670.23(a), which requires the Administrator of the OSPR to create a harbor safety committee for the Los Angeles and Long Beach Harbors. The committee issued the original Port of Los Angeles/Port of Long Beach Harbor Safety Plan (HSP) in 1991 and has issued annual updates since. Major issues facing the committee include questions regarding the need for escort tugs, required capabilities of escort tugs, and the need for new or enhanced vessel traffic information systems to monitor and advise vessel traffic.

The committee developed a regulatory scheme, which includes the minimum standards that are applicable under favorable circumstances and conditions, to institutionalize good marine practices and guide those involved in moving tanker vessels. The master or pilot will arrange for additional tug assistance if bad weather, unusual harbor congestion, or other circumstances so require.

19.3.2.3 Harbor Safety Plan

The HSP contains additional operating procedures for vessels operating in the port vicinity. The vessel operating procedures stipulated in the HSP are considered good marine practice. Some procedures are federal, state, or local regulations, while other guidelines are non-regulatory standards of care.

The HSP provides specific rules for navigation of vessels in reduced visibility conditions and does not recommend transit for vessels greater than 150,000 deadweight tonnage if visibility is less than 1 nautical mile, and for all other vessels if visibility is less than 0.5 nautical mile.

The HSP establishes vessel speed limits. In general, speeds should not exceed 12 knots within the precautionary area or 6 knots within the port. These speed restrictions do not preclude the master or pilot from adjusting speeds to avoid or mitigate unsafe conditions. Weather, vessel maneuvering characteristics, traffic density, construction/dredging activities, and other possible issues are taken into account.

19.3.2.4 Vessel Transportation Service

As described previously, the VTS is a shipping service operated by the USCG or public/private sector consortiums (see Section 19.2.1.1). These services monitor traffic in both approach and departure lanes, as well as internal movement within the port. These services use radar, radio, and visual inputs to gather real-time vessel traffic information and broadcast traffic advisories and summaries to assist mariners. The VTS that services the Port of Los Angeles is located at the entrance to the port. The system is owned by the Marine Exchange and is operated jointly by the Marine Exchange and the USCG under the oversight of the OSPR and the Harbor Safety Committee.

This system provides information on vessel traffic and ship locations so that vessels can avoid ACGs in the approaches to the port. The VTS assists in the safe navigation of vessels approaching the port in the

precautionary area. The partnership is a unique and effective approach that has gained acceptance from the maritime community.

19.4 Environmental Impacts and Mitigation Measures

19.4.1 Methodology and Assumptions

Impacts on marine transportation were assessed by determining the net increase in vessel traffic over existing (2008) conditions resulting from construction of the project elements compared to the ability of the port to safely handle vessel traffic, as well as the project's potential to increase risks to vessel traffic caused by project-related activities during construction and operation. Existing regulations regarding vessel safety are designed to avoid potential impacts and are considered standard practice.

At the preliminary design phase, during which the environmental analyses in this chapter were conducted, some details were unknown about where in the port certain activities would be conducted. In particular, this includes the specific location where excavated material from the offshore tunnel would be loaded onto barges for ocean disposal as well as the location of staging and assembly areas for the riser and diffuser. It is most likely that the staging and assembly area for the riser and diffuser would be located within the Port of Los Angeles at the Pasha Terminal between Berths 174–181; therefore, it is assumed that all materials and construction personnel activity related to the risers and diffuser would depart from and return to this location. While the specific location from which all excavated material from the offshore tunnel would be loaded onto barges is still unknown, it is reasonable to assume that the barges would be loaded at Fish Harbor, also within the Port of Los Angeles, approximately 0.5 mile from the LAXT construction shaft site.

With respect to the diffuser assemblies, the diffuser pipes may be constructed of either steel, reinforced concrete pipe (RCP), or high-density polyethylene (HDPE) pipe, as described in Chapter 3. The type of material chosen for the diffuser will affect the potential marine transportation impacts. A steel pipe or RCP diffuser would involve similar construction activities and techniques with respect to marine transportation; therefore, the impact discussions are grouped accordingly. An HDPE pipe diffuser would involve substantially different construction activities and techniques and, therefore, is discussed separately. Although each alternative in this section includes impact discussions for a steel pipe or RCP diffuser separate from an HDPE diffuser, only one method would be chosen for construction of the diffuser assemblies.

The analyses described in this chapter assume the worst-case scenario for the purposes of evaluating the greatest potentially significant environmental impacts on marine transportation. Regulatory agencies may not allow ocean disposal if the excavated material from the offshore tunnel includes hazardous contamination, unacceptable slurry mixtures, or is considered to be too rocky. However, with respect to offshore tunnel construction, it is assumed that all of the excavated material would be deemed suitable for ocean disposal by the SC-DMMT and would be disposed of at the ODMDS located farthest from the shaft sites, which in this case would be LA-3, located approximately 26 miles southeast of the Port of Los Angeles (see Figure 3-26). Additional ocean disposal sites, e.g., LA-2, may become viable alternative ODMDS sites at the time of project construction. LA-2 is located approximately 7 miles southwest of the Port of Los Angeles. Both LA-2 and LA-3 are located outside of designated traffic lanes and, therefore, would not result in direct conflicts with other vessels in these high traffic areas. Concerning marine transportation operation and safety, neither location would result in greater impacts over the other, except the location resulting in the greatest distance travelled would result in a greater amount of time in transit, during which a construction barge may potentially conflict with other marine vessels. Therefore, because

LA-2 is approximately 19 miles closer than LA-3, it is assumed that disposal site LA-2 would entail less impacts on marine transportation operation and safety relative to LA-3.

For the purposes of the analysis in this chapter, the Draft Environmental Impact Statement for the Proposed Site Designation of the LA-3 Ocean Dredged Material Disposal Site off Newport Bay, Orange County, California (LA-3 DEIS), prepared for the U.S. Environmental Protection Agency and the Corps, Los Angeles District (U.S. EPA and the Corps 2004), is incorporated herein by reference. The Final Environmental Impact Statement for the Proposed Site Designation of the LA-3 Ocean Dredged Material Disposal Site off Newport Bay, Orange County, California, was adopted in September 2005. The LA-3 DEIS analyzed the impacts associated with the proposed designation of the LA-3 site as a permanent site for the ocean disposal of dredged material and the continued operation of LA-2 (also known as the LA-3 DEIS Preferred Alternative [Alternative 3]). The LA-3 site is used in conjunction with the LA-2 site for the disposal of dredged material originating from projects located within Los Angeles and Orange Counties. The relevant analysis for the LA-3 DEIS Preferred Alternative included in the LA-3 DEIS and incorporated into this chapter is associated with marine transportation.[2]

Although there are periods during which various project elements have overlapping construction schedules, not all elements would be under construction at the same time or for the same duration. Consistent with the approach previously discussed, the greatest potentially significant environmental impacts with respect to marine transportation were assumed. Therefore, the analyses in this chapter assumed that each project element would be constructed during the phase in which all other project elements would be generating the greatest amount of marine construction traffic simultaneously.

19.4.1.1 Baseline

CEQA Baseline

The CEQA baseline includes existing marine traffic conditions and patterns where project elements would be constructed, including the marine traffic lanes providing ingress and egress to the Port of Los Angeles. The reference date for the CEQA baseline is 2008. Approximately 21,600 one-way vessel trips occurred during this time, in which the following incidents were reported: one allision, one collision, one grounding, and one close quarters (Corps 2010b).

NEPA No-Federal-Action Baseline

The NEPA no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the condition of resources at the year 2022 when construction of project elements under the Corps jurisdiction would conclude.

Historic trends at the Port of Los Angeles have shown that increasing commercial cargo volumes are accommodated primarily by an increase in vessel size rather than a considerable increase in vessel traffic,

[2] The analysis regarding marine transportation is included in Chapter 3 of the LA-3 DEIS on pages 3-99 to 3-105, and for the Preferred Alternative in Chapter 4 on pages 4-33 to 4-34. Additionally, the cumulative analysis for recreation associated with the LA-3 Preferred Alternative is included in Chapter 4 of the LA-3 DEIS on pages 4-78 to 4-79. Finally, the relationship between short-term and long-term resource use and the irreversible or irretrievable commitment of resources on pages 4-80 to 4-81 of the LA-3 DEIS is applicable. The analysis in the LA-3 DEIS is relevant to the Clearwater Program analysis because construction of the offshore tunnel in Alternatives 1, 2, and 3 could require ocean disposal of the excavated material and would make use of either LA-3 or LA-2. The quantity of excavated material is defined in Chapter 3 of the Clearwater Program EIR/EIS and would not exceed the maximum limits of either LA-3 or LA-2. Therefore, because the LA-3 DEIS analyzed vessel impacts associated with disposing dredged materials at LA-3 and LA-2, this chapter incorporates the analysis by reference and does not provide additional information.

and it is expected that this trend will continue through the year 2022, when construction of the project would be completed. The analysis in this chapter assumes that overall traffic volumes at the project planning horizon will be comparable to existing conditions. Therefore, the NEPA no-federal-action baseline is the same as the CEQA baseline for marine transportation.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

19.4.2 Thresholds of Significance

The project would pose a significant impact if it exceeds any of the following thresholds for marine transportation and traffic (TRM):

TRM-1. Interferes with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles.

TRM-2. Impairs the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on marine transportation and traffic before mitigation. Table 19-6 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 19-6 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 19-6. Thresholds Evaluated

		Threshold	
	Alt.	**TRM-1**	**TRM-2**
Project Element			
Wilmington to SP Shelf (offshore tunnel)	1	X	X
Wilmington to PV Shelf (offshore tunnel)	2	X	X
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3	X	X
SP Shelf Riser/Diffuser Area	1	X	X
PV Shelf Riser/Diffuser Area	2,3	X	X
Existing Ocean Outfalls Riser/Diffuser Area	1–4	X	

Alt. = alternative

In the alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first alternative in which it appears.

19.4.3 Alternative 1

19.4.3.1 Program

Alternative 1 (Program) does not include marine elements and, therefore, has no potential to have an impact on marine transportation and traffic.

19.4.3.2 Project

Impact TRM-1. Would Alternative 1 (Project) interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles?

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

Excavated material from the Wilmington to SP Shelf offshore tunnel that is designated and approved for offshore disposal would most likely be conveyed by 5,000-ton barges and disposed of at the existing LA-3 ODMDS, which is located approximately 26 miles from the Palos Verdes Shelf (PV Shelf) site, 21 miles from the SP Shelf site, and 26 miles from the Port of Los Angeles, as shown on Figure 3-26.[3] This site has been used for the disposal of clean dredged material originating in the Los Angeles and Orange County region and is managed at a maximum annual disposal quantity of 2,500,000 cubic yards. There would be an average of 2.6 one-way barge trips (5,000 ton) per week, resulting in approximately 135 one-way barge trips per year between Fish Harbor and LA-3 to dispose of clean excavated material for the entire 6.5-year duration of offshore tunnel construction. During maximum tunneling rates, there would be a maximum of approximately 5.2 one-way barge trips per week between Fish Harbor and LA-3. (Parsons 2011).

As previously discussed, the Port of Los Angeles handles a large amount of marine traffic. Approximately 21,600 one-way deep-draft vessel trips occurred in 2008 (or approximately 415 one-way deep-draft vessel trips per week). It is assumed that disposal barges would utilize similar navigation patterns as deep-draft vessels as they transit from Fish Harbor to LA-3. The addition of an average of approximately 135 one-way barge trips per year to existing deep-draft commercial vessel traffic in this area would represent an increase of less than 1 percent over existing conditions. The addition of a maximum of approximately 5.2 one-way barge trips per week to existing deep-draft commercial vessel traffic in this area would represent an increase of approximately 1 percent over existing conditions. Therefore, given the large number of commercial (non deep-draft) and recreational vessel traffic in this area, the addition of an average of approximately 135 one-way barge trips per year or a maximum of approximately 5.2 one-way barge trips per week would represent a relatively minor increase over existing conditions. Even when combined with marine construction vessel traffic that would be generated by overlapping construction activities related to other project elements, the relative increase in vessels required to dispose of excavated material from construction of the offshore tunnel could be safely accommodated by existing marine traffic management systems such as the VTS and the Marine Exchange without interfering with the vessel traffic lanes entering the port. In addition, barges that would be utilized in the transport of offshore tunnel excavated material to LA-3 would be similar in size and

[3] As described in Section 19.4.1, ODMDS LA-3 was used because it represents the worst-case scenario; however, excavated material may not necessarily be disposed of at this location.

function to other marine vessels currently operating in and around the port and, therefore, would not interfere with other vessels operating in the vicinity of the disposal barges. (Betz pers. comm. 2010.)

Vessels that would be utilized in project construction activities would adhere to all safety protocols including USCG regulations, HSP speed limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during construction of the offshore tunnel would represent an increase over existing conditions, it would not interfere with the designated vessel traffic lanes entering the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

The parts and materials for the riser and diffuser would be brought to the Pasha Terminal within the Port of Los Angeles via truck from somewhere within the greater Los Angeles region. HDPE diffuser components would be assembled at the Pasha Terminal. Both the riser and diffuser would be transported by barge from the Pasha Terminal to the SP Shelf for installation.

Marine vessels necessary for construction of the riser and diffuser are summarized in Table 19-7. All of the work, including mobilization, preassembly, site preparation, construction, and demobilization would take approximately 24 months for the riser and approximately 6 to 12 months for the diffuser, depending upon the diffuser pipe material. The majority of the riser and diffuser construction work would be based on one 10-hour shift per day, 5-day-per-week schedule. The exception to this is when the pre-fabricated riser assembly is transported to the installation site; during this period the construction work would take place on a continuous 24-hour-per-day basis for approximately 1 week.

Table 19-7. Anticipated Riser and Diffuser Construction Activities and Vessels

Project Activity	No.	Vessel Type	Trip Frequency	Maximum Weekly Trips	Schedule
Riser					
All work	1	Jack-up Platform or Barge and Tugboat	1 round-trip	<1	24 months
All work	1–2	Supply Barge and Tugboat	1 round-trip per day	10	24 months
Transport and position riser assembly	2	Tugboat	1 round-trip	<1	1 week
Crew: riser assembly installation	1	Crew Vessel	3 round-trips per day	15	1 month
Crew: all other work	1	Crew Vessel	1 round-trip per day	5	23 months
Steel or RCP Diffuser					
All work	1	Derrick Barge and Tugboat	1 round-trip	<1	12 months
Transport diffuser piping	1	Supply Barge and Tugboat	1 round-trip per day	5	12 months
Transport ballast rock[a]	1–2	Supply Barge and Tugboat	1 round-trip per 1–2 days	10	12 months
Crew: all work	1	Crew Vessel	1 round-trip per day	5	12 months
HDPE Diffuser					
Site preparation	1	Derrick Barge and Tugboat	1 round-trip	<1	6 months
Placement of diffuser piping	1	Pull Barge and Tugboat	1 round-trip	<1	1 month
Placement of diffuser piping	1	Pump Barge and Tugboat	1 round-trip	<1	1 month
Transport ballast rock[a]	1–2	Supply Barge and Tugboat	1 round-trip per 1–2 days	10	60–120 days
Transport and position diffuser piping[b]	2–4	Tugboat	2 round trip per day	8	1 month
Crew: all work	1	Crew Vessel	1 round-trip per day	5	6 months
Existing Ocean Outfalls Rehabilitation					
Transport ballast rock[c]	1	Supply Barge and Tugboat	1 round-trip per 1–2 days	5	2 months
Placement of ballast rock	1	Derrick Barge	1 round-trip	<1	1 month
Transport of materials	1	Supply Barge and Tugboat	1 round-trip per week	1	1 month
Joint repair	1	Work Vessel	1 round-trip per day	5	1 month
Crew: all work	1	Crew Vessel	1 round-trip per day	5	1 month

[a] 60 to 120 total trips
[b] Assumes eight legs, four tugs per leg, equaling 32 total tug round-trips
[c] 15 to 20 total trips

The riser and diffuser area would be located in the southwest corner of the precautionary area on the SP Shelf, adjacent to the southbound coastwise traffic lane as shown on Figure 19-1. The proximity of the traffic lane to construction work in this area may require temporary adjustment to the traffic lane in order to direct marine traffic around construction vessels. Per 33 CFR Part 167.15, the Commandant of the Coast Guard may authorize an adjustment in the form of a temporary traffic lane shift, a temporary suspension of a section of the scheme, a temporary precautionary area overlaying a lane, or other appropriate measure. The USCG would provide notice of adjustments in the appropriate LNM and in the Federal Register. Requests for temporary adjustments to traffic separation schemes must be submitted 150 days prior to the time the adjustment is desired, and should be submitted to the District Commander of the Coast Guard District in which the traffic separation scheme is located. The COTP may also need to issue a deviation to the RNA rules, which require certain vessels to keep engines ready for immediate maneuver and maintain passing distances of at least 0.25 nautical mile from other vessels (Hennigan pers. comm.).

Staging of construction vessels at the riser and diffuser area would be highly visible, and would require buoys at the riser and diffuser site to stage construction vessels for the duration of construction activities. Smaller vessels would avoid construction vessels by visual observation. However, fishermen regularly trawl within the precautionary area, and the anchor spread of barges located at the riser and diffuser area during construction is an issue as cables would not be easily seen. Trawling and gill nets could be affected by anchoring systems in the event that fishermen trawling in the vicinity of construction do not heed LNMs released by the USCG. Lighted buoys would be required at the riser and diffuser area for staging of construction vessels for a period of 6 to 12 months. Because these buoys would be placed in a navigable water regulated by the USCG, they would be considered a permanent private aid to navigation (PATON), requiring a Class II PATON permit from the USCG for placement of buoys in waters used by general navigation (USCG 2010a). After processing the permit, the USCG district commander would recommend to the NOAA, through publication in the LNM, to chart the buoys as permanent Class II PATONs (USCG 2010b).

Overall, marine traffic generated by construction of the riser and diffuser on the SP Shelf would result in an increase of vessel calls compared to existing conditions. However, vessels that would be utilized in project construction activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during construction of the riser and diffuser assembly would represent an increase over existing conditions, it would not interfere with the designated vessel traffic lanes entering the Port of Los Angeles. Impacts would be less than significant.

Specific construction activities related to the riser and the different types of diffuser under consideration are discussed below.

Riser

The top of the riser head structure would be positioned approximately 20 feet above the surrounding seabed. Although the riser would be installed outside of designated ship anchorage areas, ballast rock, the quantity of which is estimated in Section 3.3.2.4, would be placed within a 75-foot radius around the riser head to protect the structure from wave and current forces, fishing activities, dragging ship anchors, and direct anchor hits. Either a pile-supported jack-up platform would be installed above the site of the riser or an anchored barge would be used to provide a base from which to support installation of the riser assembly.

Installation of the riser would occur over a period of 24 months and would require the marine vessels summarized in Table 19-7, including a jack-up platform or barge and tugboat, supply barge, multiple tugboats, and crew vessels. Preparation of the seabed surrounding the riser site would require up to two barges and tugboats and one crew vessel making daily round-trips from the Pasha Terminal to the SP Shelf for the entire 24-month duration. An additional crew vessel making three daily round-trips for approximately 1 month would be required during installation of the riser assembly. Other marine vessels associated with installation of the riser include one round-trip each of the jack-up platform or barge and tugboat, and the use of two tugboats for transport of the riser assembly from the Pasha Terminal to the SP Shelf.

As previously discussed, preparation of the seabed surrounding the riser site would occur within the precautionary area on the SP Shelf, and may require an adjustment to the southbound vessel traffic lanes. Construction activities would result in temporary increases in the number of marine vessels currently utilizing the vessel traffic lanes and precautionary area surrounding the port. However, construction work would not occur within pilot approach areas, deepwater channels, or anchorage areas. The USCG would issue a LNM using radio, printed notices, and chart corrections, and a minimum clearance of approximately 0.25 nautical mile would be maintained with other marine vessels within the precautionary area. With implementation of standard marine safety practices and the precautions previously listed, the construction vessels would not interfere with the vessel traffic lanes and the probability of accidents would be very low. Impacts would be less than significant.

Steel or RCP Diffuser

Installation of a steel or RCP diffuser would occur over a period of 12 months and would require the marine vessels summarized in Table 19-7, including a derrick barge, supply barges, supporting tugboats, and a crew vessel. Trenching and dredging would be required along the diffuser alignment. Site preparation would require one round-trip of a derrick barge and tugboat. Transport of the diffuser piping would require daily round-trips of a supply barge and tugboat from the Pasha Terminal to the diffuser area for 12 months. Transport of ballast rock would require up to two supply barges and tugboats making round-trips every 1 to 2 days for approximately 12 months. Ballast rock would be sourced from either a location off the coast of Mexico or from Catalina Island. One crew vessel would be required, making one daily round-trip from the port to the diffuser area.

Similar to installation of the riser, preparation of the seabed surrounding the diffuser would occur within the precautionary area and may require an adjustment to the vessel traffic lanes. Construction activities would result in temporary increases in the number of marine vessels currently utilizing the vessel traffic lanes and precautionary area surrounding the port. However, construction work would not occur within pilot approach areas, deepwater channels, or anchorage areas. For construction activities at the diffuser area, the USCG would issue a LNM using radio, printed notices, and chart corrections, and a minimum clearance of approximately 0.25 nautical mile would be maintained with other marine vessels within the precautionary area. With implementation of standard marine safety practices and the precautions previously listed, the construction vessels would not interfere with the vessel traffic lanes and the probability of accidents would be very low. Impacts would be less than significant.

HDPE Diffuser

If the diffuser were constructed of HDPE pipe, no trenching or dredging on the SP Shelf would be required, although some minor grading may be required because the HDPE diffuser would be placed directly on the seafloor. There would also be a limited amount of ballast rock required to protect the piping and riser as estimated in Section 3.3.2.4. The HDPE design would consist of a manifold with eight diffuser legs. The pipe outer diameter would range in size from approximately 63 inches to 42 inches. Construction vessels would work in an ocean surface area covering approximately 8 acres (the riser,

manifold, and diffuser would cover a seafloor area of approximately 8 acres). Approximately 1,500 pre-installed concrete anchor blocks would be attached to the HDPE piping to provide ballast during the sinking and installation process as well as to provide stability against ocean currents and wave-induced hydrodynamic loading.

The HDPE diffuser piping would be prepared and assembled into continuous segments for each of the eight legs, ranging from 1,000 to 4,000 feet in length, at the Pasha Terminal in the Port of Los Angeles. From this location, the HDPE pipes would be pressurized, partially submerged with the assistance of ballast weights, and towed to the site with a pulling tugboat, a trailing tugboat, and several assist vessels. During the tow, the air pressure inside the pipeline would be monitored to ensure that the initial pressure is maintained. Each of the pipelines would be independently towed to the offshore diffuser site under good to fair weather and wave conditions that would ensure a successful deployment.

Overall construction and installation of the HDPE diffuser would occur over a period of approximately 6 months and would require the marine vessels summarized in Table 19-7, including a derrick barge, pull barge, pump barge, supply barge, supporting tugboats, and a crew vessel. Transport and positioning of the diffuser piping would require up to four tugboats each making daily round-trips from the Pasha Terminal to the diffuser area for approximately 1 month. Preparation of the seabed would require one round-trip of a derrick barge and supporting tugboat and daily round-trips of a crew vessel operating at the diffuser area for approximately 6 months. Placement of the diffuser would require a pull barge, a pump barge, and supporting tugboats making one round-trip from the Pasha Terminal to the diffuser area for a duration of approximately 1 month.

A 4,000-foot-long HDPE pipe segment is three times greater in length than the largest commercial deep-draft vessels currently calling at the port. As a result, the USCG may issue a LNM warning other vessels transiting the precautionary area for each transport of HDPE pipeline.

Similar to installation of the riser, preparation of the seabed for the HDPE diffuser site on the SP Shelf would occur within the precautionary area, and may require an adjustment to the vessel traffic lanes. Construction activities would result in temporary increases in the number of marine vessels currently utilizing the vessel traffic lanes and precautionary area surrounding the port; however, construction work would not occur within pilot approach areas, deepwater channels, or anchorage areas. For construction activities at the diffuser area, the USCG would issue a LNM using radio, printed notices, and chart corrections, and a minimum clearance of approximately 0.25 nautical mile would be maintained with other marine vessels within the precautionary area. With implementation of standard marine safety practices and the precautions previously listed, the construction vessels would not interfere with the vessel traffic lanes and the probability of accidents would be very low. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Operation

CEQA Analysis

Operation of the riser and diffuser on the SP Shelf would involve periodic maintenance activities conducted on an as needed basis, similar in scope and scale to those currently conducted at the existing

outfalls on the PV Shelf. The Sanitation Districts inspect the existing outfalls once a year due to discharge permit requirements, and similar inspections would also be conducted on the riser and diffuser on the SP Shelf. The inspections would occur over the life of the facilities, or until there is a change in the discharge permit. However, unlike maintenance activities currently conducted at the existing outfalls, the riser and diffuser on the SP Shelf would be located within the precautionary area adjacent to the southbound vessel traffic lanes, thus increasing the exposure of these maintenance activities to other vessels transiting the vessel traffic lanes and precautionary area. Marine traffic generated by operation and maintenance of the riser and diffuser on the SP Shelf would result in an increase of vessel calls compared to existing conditions; however, this traffic would be similar to that currently conducted for the existing outfalls.

Marine vessels that would be utilized in these activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. In addition, the USCG would issue a LNM during maintenance activities to inform other vessels of the activities occurring in the area. Therefore, although marine traffic generated during operation and maintenance of the riser and diffuser would represent an increase over existing conditions and would occur within the precautionary area adjacent to the southbound vessel traffic lanes, it would not interfere with the designated vessel traffic lanes entering the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the operational life of the structure. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Riser/Diffuser Area – Existing Ocean Outfalls

Construction

CEQA Analysis

The existing ocean outfalls extend from the existing manifold structure at Royal Palms Beach as described in Section 2.2.4.3. The project may include improvements to the existing ocean outfalls, such as joint repairs and re-ballasting. The re-ballasting work would occur on the existing 72-, 90-, and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A small derrick barge would be used to place the ballast rock around the outfalls and support the joint repair work. Joint repairs would involve temporarily removing some of the existing ballast rock from around the outfalls to fully expose the joint being repaired. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The existing ballast rock would be replaced around the pipe. The marine vessels required for this work are listed in Table 19-7.

The majority of the construction work would be based on one 10-hour shift per day, 5 days per week. It is estimated that approximately eight to ten construction workers would be needed for the rehabilitation work for a period of approximately 2 months. Marine vessels required for this rehabilitation would involve a supply barge, derrick barge, supporting tugboats, a work vessel, and a crew vessel. Transport of ballast rock would require a supply barge and tugboat operating one round-trip every 1 to 2 days for approximately 2 months. Placement of ballast rock would require a derrick barge conducting one round-trip over a 1-month period. Transport of materials would require a supply barge and tugboat operating one round-trip per week for approximately 1 month. Joint repairs and transport of construction

workers would require a work vessel and crew vessel operating one daily round-trip for approximately 1 month.

Overall, marine traffic generated by rehabilitation of the existing outfalls on the PV Shelf would result in an increase in vessel calls compared to existing conditions; however, these activities would occur outside of the precautionary area and vessel traffic lanes. Vessels that would be utilized in rehabilitation activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during rehabilitation of the existing outfalls would represent an increase over existing conditions, it would not interfere with the designated vessel traffic lanes entering the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described above for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction and operation of Alternative 1 (Project) would not interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction and operation of Alternative 1 (Project) would not interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact TRM-2. Would Alternative 1 (Project) impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles?

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

As discussed under Impact TRM-1, construction activities related to disposal of excavated material for the Wilmington to SP Shelf offshore tunnel would result in an increase in marine traffic due to barges transporting excavated material to the offshore ocean disposal site LA-3.[4] Even when combined with marine traffic that would be generated by overlapping construction activities related to other project elements, the relative increase in vessels required to dispose of excavated material from construction of the offshore tunnel could be safely accommodated by existing marine traffic management systems including the VTS and Marine Exchange. In addition, the barges that would be utilized in the transport of excavated material to LA-3 would be similar in size and function to other vessels operating in and around the port and, therefore, would not result in safety hazards to other vessels operating in the vicinity, including fishing vessels operating in Fish Harbor.

Vessels that would be utilized in project construction activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during construction of the offshore tunnel would represent an increase over existing conditions, it would not impair the level of safety of other vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

As discussed under Impact TRM-1, construction activities related to construction and installation of the riser and diffuser on the SP Shelf would result in an increase in marine traffic due to barges transporting equipment and personnel from the Pasha Terminal to the SP Shelf. Even when combined with marine traffic that would be generated by overlapping construction activities related to other project elements, the relative increase in vessels required for the construction and installation of the riser and diffuser could be safely accommodated by existing marine traffic management systems including the VTS and the Marine Exchange. With the exception of transport of the HDPE diffuser pipes, the barges, tugboats, and work

[4] As described in Section 19.4.1, ODMDS LA-3 was used because it represents the worst-case scenario; however, excavated material may not necessarily be disposed of at this location.

and crew vessels that would be utilized in the transport of materials and personnel would be similar in size and function to other vessels operating in and around the port and, therefore, would not impair the safety of other vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles.

With respect to the transport of the HDPE diffuser pipes, the use of proper precautions including issuance of a LNM by the USCG would be sufficient to prevent safety issues or conflicts with other vessels navigating this area. Lighted buoys would be required at the riser and diffuser area for staging of construction vessels for a period of approximately 6 to 12 months, requiring a Class II PATON permit from the USCG for placement of buoys in waters used by general navigation (USCG 2010a). After processing the permit, the USCG district commander would recommend to the NOAA, through publication in the LNM, to chart the buoys as permanent Class II PATONs to inform other marine vessels of their location (USCG 2010b). Furthermore, vessels that would be utilized in project construction activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during construction of the riser and diffuser on the SP Shelf would represent an increase over existing conditions and would be greater in length than the existing types of vessels transiting the Port of Los Angeles, it would not impair the level of safety of other vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

19.4.3.3 Impact Summary – Alternative 1

Impacts on marine transportation and traffic analyzed in this EIR/EIS for Alternative 1 (Project) are summarized in Table 19-8. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Alternative 1 (Program) does not include marine elements and has no potential to have an impact on marine transportation and traffic; therefore, an Impact Summary – Alternative 1 (Program) table is not included.

Table 19-8. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRM-1. Would Alternative 1 (Project) interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles?				
Tunnel Alignment				
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
	CEQA Less Than Significant Impact During Operation	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Operation
	NEPA Less Than Significant Impact During Operation	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Operation
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact TRM-2. Would Alternative 1 (Project) impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles?				
Tunnel Alignment				
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 19-8 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

19.4.4 Alternative 2

19.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program) and has no marine elements; therefore, Alternative 2 (Program) has no potential to have an impact on marine transportation and traffic.

19.4.4.2 Project

The impacts for the existing ocean outfalls for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact TRM-1. Would Alternative 2 (Project) interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

Construction activities relating to the Wilmington to PV Shelf offshore tunnel for Alternative 2 (Project) are similar to those described under Alternative 1 (Project); however, Alternative 2 (Project) would result in a shorter duration during which excavated material would be barged to ocean disposal site LA-3.[5, 6] Less excavated material would be generated because the offshore tunnel alignment between the Trans Pacific Container Service Corporation (TraPac) shaft site and the PV Shelf riser and diffuser area would be shorter than the Alternative 1 (Project) offshore tunnel alignment by approximately 26,250 feet, resulting in fewer ocean disposal barge trips for Alternative 2 (Project).

[5] The offshore tunnel under Alternative 2 (Project) would be approximately 29,250 feet in length and would take approximately 5 years to construct. The offshore tunnel under Alternative 1 (Project) would be approximately 55,500 feet in length and would take approximately 6.5 years to construct.

[6] As described in Section 19.4.1, ODMDS LA-3 was used because it represents the worst-case scenario; however, excavated material may not necessarily be disposed of at this location.

As determined under Alternative 1 (Project), even when combined with marine traffic that would be generated by overlapping construction activities related to other project elements, the relative increase in vessels required to dispose of excavated material from construction of the offshore tunnel could be safely accommodated by existing marine traffic management systems including the VTS and the Marine Exchange. The barges that would be utilized in the transport of excavated material to LA-3 would be similar in size and function to other vessels operating in and around the port and, therefore, would not result in safety hazards to other vessels operating in the vicinity.

Furthermore, vessels that would be utilized in project construction activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during construction of the offshore tunnel would represent an increase over existing conditions, it would not interfere with the designated vessel traffic lanes entering the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

Construction activities relating to construction of the riser and diffuser on the PV Shelf for Alternative 2 (Project) are similar to those described on the SP Shelf under Alternative 1 (Project). The majority of the diffuser would be located outside of the precautionary area, with only a small portion of the eastern edge of the diffuser being located within the far western edge of the precautionary area. Although the diffuser would be partially located within the precautionary area, it would be located away from the primary flow of traffic entering and exiting via the vessel traffic lanes. The USCG would provide notice to other marine vessels of the presence of construction vessels in the vicinity of the precautionary area through the LNM.

Lighted buoys would be required at the riser and diffuser area, outside of the precautionary area, to stage construction vessels for a period of approximately 6 to 12 months. The buoys would require a Class II PATON permit from the USCG for placement of buoys in waters used by general navigation (USCG 2010a). After processing the permit, the USCG district commander would recommend to the NOAA, through publication in the LNM, to chart the buoys as permanent Class II PATONs to inform other marine vessels of their location (USCG 2010b). All other elements related to construction and installation of the riser and diffuser would be the same, including staging and transport of the riser and construction personnel from the Pasha Terminal to the PV Shelf; staging, assembly and transport of the HDPE diffuser and construction personnel to the PV Shelf; staging, assembly and transport of the steel or RCP diffuses and construction personnel to the PV Shelf; and offshore installation of the riser and diffuser on the PV Shelf.

Overall, marine traffic generated by construction of the riser and diffuser on the PV Shelf would result in an increase of vessel calls compared to existing conditions. However, vessels that would be utilized in

project construction activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during construction of the riser and diffuser assembly would represent an increase over existing conditions, it would not interfere with the designated vessel traffic lanes entering the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 2 (Project) would not interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 2 (Project) would not interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles. Impacts under NEPA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact TRM-2. Would Alternative 2 (Project) impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

Construction activities relating to the Wilmington to PV Shelf offshore tunnel for Alternative 2 (Project) are similar to those described under Alternative 1 (Project); however, Alternative 2 (Project) would result in a shorter duration during which tunnel excavated material would be barged to ocean disposal site

LA-3.[7, 8] This is due to the fact that the offshore tunnel alignment between the TraPac shaft site and the PV Shelf riser and diffuser area is shorter than the Alternative 1 (Project) offshore tunnel alignment by approximately 26,250 feet.

As discussed under Alternative 1 (Project), construction activities related to disposal of offshore tunnel excavated material would result in an increase in marine traffic due to barges transporting excavated material to the offshore ocean disposal site LA-3. Even when combined with marine traffic that would be generated by overlapping construction activities related to other project elements, the relative increase in vessels required to dispose of excavated material from construction of the offshore tunnel could be safely accommodated by existing marine traffic management systems including the VTS and the Marine Exchange. The barges that would be utilized in the transport of excavated material to LA-3 would be similar in size and function to other vessels operating in and around the port and, therefore, would not result in safety hazards to other vessels operating in the vicinity, including fishing vessels operating in Fish Harbor.

Furthermore, vessels that would be utilized in project construction activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during construction of the offshore tunnel would represent an increase over existing conditions, it would not impair the level of safety of other vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis

Construction activities relating to construction of the riser and diffuser on the PV Shelf for Alternative 2 (Project) are similar to those on the SP Shelf described under Alternative 1 (Project). The majority of the diffuser would be located outside the precautionary area on the PV Shelf, with only a small portion of the eastern edge of the diffuser being located within the far western edge of the precautionary area. Although the diffuser would be partially located within the precautionary area, it would be located away from the primary flow of traffic entering and exiting via the vessel traffic lanes. The USCG would provide notice to other marine vessels of the presence of construction vessels in the vicinity of the precautionary area through the LNM.

[7] The offshore tunnel under Alternative 2 (Project) would be approximately 29,250 feet in length and would take approximately 5 years to construct. The offshore tunnel under Alternative 1 (Project) would be approximately 55,500 feet in length and would take approximately 6.5 years to construct.
[8] As described in Section 19.4.1, ODMDS LA-3 was used because it represents the worst-case scenario; however, excavated material may not necessarily be disposed of at this location.

Lighted buoys would be required at the riser and diffuser area, outside of the precautionary area, to stage construction vessels for a period of approximately 6 to 12 months. The buoys would require a Class II PATON permit from the USCG for placement of buoys in waters used by general navigation (USCG 2010a). After processing the permit, the USCG district commander would recommend to the NOAA, through publication in the LNM, to chart the buoys as permanent Class II PATONs to inform other marine vessels of their location (USCG 2010b). All other elements related to construction and installation of the riser and diffuser would be the same, including staging and transport of the riser and construction personnel from the Pasha Terminal to the PV Shelf riser and diffuser area; staging, assembly and transport of the HDPE diffuser and construction personnel to the PV Shelf; staging, assembly and transport of the steel or RCP diffuser and construction personnel to the PV Shelf; and offshore installation of the riser and diffuser.

Overall, construction activities related to construction and installation of the riser and diffuser on the PV Shelf would result in an increase in marine traffic due to barges transporting equipment and personnel to the riser and diffuser area. Even when combined with marine traffic that would be generated by overlapping construction activities related to other project elements, the relative increase in vessels required for the construction and installation of the riser and diffuser could be safely accommodated by existing marine traffic management systems including the VTS and the Marine Exchange. With the exception of transport of the HDPE diffuser pipes, the barges, tugboats, and work and crew vessels that would be utilized in the transport of materials and personnel would be similar in size and function to other vessels operating in and around the port and, therefore, would not impair the safety of other vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles.

With respect to transport of the HDPE diffuser pipes, the use of proper precautions including issuance of a LNM by the USCG would be sufficient to prevent safety issues or conflicts with other vessels navigating this area. Furthermore, vessels that would be utilized in project construction activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during construction of the riser and diffuser on the PV Shelf would represent an increase over existing conditions and would be out of scale compared to the existing types of vessels transiting the Port of Los Angeles, it would not impair the level of safety of other vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 2 (Project) would not impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 2 (Project) would not impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts under NEPA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

19.4.4.3 Impact Summary – Alternative 2

Impacts on marine transportation and traffic analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 19-9. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Alternative 2 (Program), which is the same as Alternative 1 (Program), does not include marine elements and has no potential to have an impact on marine transportation and traffic.

Table 19-9. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRM-1. Would Alternative 2 (Project) interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles?				
Tunnel Alignment				
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 19-9 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRM-2. Would Alternative 2 (Project) impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles?				
Tunnel Alignment				
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

19.4.5 Alternative 3

19.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program) and does not include marine elements; therefore, Alternative 3 (Program) has no potential to have an impact on marine transportation and traffic.

19.4.5.2 Project

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as for Alternative 2 (Project). The impacts for the existing ocean outfalls would be the same as for Alternative 1 (Project).

Impact TRM-1. Would Alternative 3 (Project) interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

Construction activities relating to the Figueroa/Gaffey to PV Shelf offshore tunnel for Alternative 3 (Project) are similar to those described under Alternatives 1 (Project) and 2 (Project); however, Alternative 3 (Project) would result in an even shorter duration during which excavated material would be

barged to ocean disposal site LA-3.[9, 10] This is due to the fact that the offshore tunnel alignment between the Angels Gate shaft site and the PV Shelf riser and diffuser area is shorter than the Alternative 1 (Project) offshore tunnel alignment between the TraPac shaft site and the SP Shelf by approximately 43,200 feet, and is shorter than the Alternative 2 (Project) offshore tunnel alignment between the TraPac shaft site and the PV Shelf by approximately 16,950 feet.

As determined under Alternative 1 (Project), even when combined with marine traffic that would be generated by overlapping construction activities related to other project elements, the relative increase in vessels required to dispose of excavated material from construction of the offshore tunnel could be safely accommodated by existing marine traffic management systems including the VTS and the Marine Exchange. The barges that would be utilized in the transport of tunnel excavated material to LA-3 would be similar in size and function to other vessels operating in and around the port and, therefore, would not interfere with other vessels operating in the vicinity.

Furthermore, vessels that would be utilized in project construction activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during construction of the offshore tunnel would represent an increase over existing conditions, it would not interfere with the designated vessel traffic lanes entering the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles. Impacts under NEPA would be less than significant.

Mitigation

No mitigation is required.

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[9] The offshore tunnel under Alternative 3 (Project) is approximately 12,300 feet in length and would take approximately 5 years to construct. The offshore tunnel under Alternative 2 (Project) is approximately 29,250 feet in length and would take approximately 5 years to construct. The offshore tunnel under Alternative 1 (Project) is approximately 55,500 feet in length and would take approximately 6.5 years to construct.

[10] As described in Section 19.4.1, ODMDS LA-3 was used because it represents the worst-case scenario; however, excavated material may not necessarily be disposed of at this location.

Residual Impacts
Impacts would be less than significant.

Impact TRM-2. Would Alternative 3 (Project) impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis
Construction activities relating to the Figueroa/Gaffey to PV Shelf offshore tunnel for Alternative 3 (Project) are similar to those described under Alternatives 1 (Project) and 2 (Project); however, Alternative 3 (Project) would result in an even shorter duration during which excavated material would be barged to ocean disposal site LA-3.[11, 12] This is due to the fact that the offshore tunnel alignment between the Angels Gate shaft site and the PV Shelf riser and diffuser area is shorter than both the Alternatives 1 (Project) and 2 (Project) offshore tunnel alignments.

As discussed under Alternative 1 (Project), construction activities related to disposal of offshore tunnel excavated material would result in an increase in marine traffic due to barges transporting excavated material to the offshore ocean disposal site LA-3. Even when combined with marine traffic that would be generated by overlapping construction activities related to other project elements, the relative increase in vessels required to dispose of excavated material from construction of the offshore tunnel could be safely accommodated by existing marine traffic management systems including the VTS and the Marine Exchange. The barges that would be utilized in the transport of excavated material to LA-3 would be similar in size and function to other vessels operating in and around the port and, therefore, would not result in safety hazards to other vessels operating in the vicinity, including fishing vessels operating in Fish Harbor.

Vessels that would be utilized in project construction activities would adhere to all safety protocols including USCG regulations, HSP speed-limit regulations, traffic separation schemes, limited visibility guidelines, VTS monitoring requirements, and port tariffs requiring vessels of foreign registry to use a port pilot for transit in and out of the port and adjacent waterways. Therefore, although marine traffic generated during construction of the offshore tunnel would represent an increase over existing conditions, it would not impair the level of safety of other vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

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[11] The offshore tunnel under Alternative 3 (Project) is approximately 12,300 feet in length and would take approximately 5 years to construct. The offshore tunnel under Alternative 2 (Project) is approximately 29,250 feet in length and would take approximately 5 years to construct. The offshore tunnel under Alternative 1 (Project) is approximately 55,500 feet in length and would take approximately 6.5 years to construct.

[12] As described in Section 19.4.1, ODMDS LA-3 was used because it represents the worst-case scenario; however, excavated material may not necessarily be disposed of at this location.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

19.4.5.3 Impact Summary – Alternative 3

Impacts on marine transportation and traffic analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 19-10. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Alternative 3 (Program), which is the same as Alternative 1 (Program), does not include marine elements and has no potential to have an impact on marine transportation and traffic.

Table 19-10. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRM-1. Would Alternative 3 (Project) interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 19-10 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact TRM-2. Would Alternative 3 (Project) impair the level of safety for vessels navigating the Main Channel or West Basin area within the Port of Los Angeles, or precautionary areas outside the Port of Los Angeles?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

19.4.6 Alternative 4 (Recommended Alternative)

19.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program) and does not include marine elements; therefore, Alternative 4 (Program) has no potential to have an impact on marine transportation and traffic.

19.4.6.2 Project

The construction impacts for the rehabilitation of the existing ocean outfalls for Alternative 4 (Project) would be the same as for Alternative 1 (Project).

19.4.6.3 Impact Summary – Alternative 4

Impacts on marine transportation and traffic analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 19-11. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Alternative 4 (Program), which is the same as Alternative 1 (Program), does not include marine elements and has no potential to have an impact on marine transportation and traffic.

Table 19-11. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact TRM-1. Would Alternative 4 (Project) interfere with the operation of designated vessel traffic lanes entering and exiting the Port of Los Angeles?				
Riser/Diffuser Area				
Existing Ocean Outfalls	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

19.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an environmental impact report (EIR) must evaluate a no-project alternative. A no-project alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the Joint Outfall System (JOS) in accordance with the JOS 2010 Master Facilities Plan (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the water reclamation plants, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

19.4.7.1 Program

Alternative 5 (Program) does not include marine elements and has no potential to have an impact on marine transportation and traffic.

19.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses, as described in Section 3.4.1.5. The emergency discharges would not affect marine transportation. No impacts would occur.

19.4.7.3 Impact Summary – Alternative 5

Alternative 5 would result in no impacts on marine transportation and traffic. Alternative 5 (Program), which is the same as Alternative 1 (Program) excluding process optimization, does not include marine

elements and has no potential to have an impact on marine transportation and traffic. Additionally, there would be no impacts for Alternative 5 (Project).

19.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.6 and 19.4.7.2. The program elements for the recommended alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

19.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

19.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

19.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Impacts for Alternative 6 would be the same as discussed under Alternative 5 (Project); therefore, there would be no impacts on marine transportation and traffic for Alternative 6.

19.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

The impacts on marine transportation and traffic for all alternatives would be less than significant. No mitigation is required. Therefore, a table summarizing significant impacts and mitigation is not included in this chapter.

Chapter 20
UTILITIES, SERVICE SYSTEMS, AND ENERGY

20.1 Introduction

This chapter describes the existing conditions and applicable regulations for utilities, service systems, and energy. It analyzes the potential impacts on utilities, service systems, and energy resulting from implementation of the program and project elements, and any necessary mitigation measures that would reduce these impacts. This includes potential impacts resulting from availability of water supplies, the availability of energy, and stormwater infrastructure to serve the program and project elements' projected needs. Information used to prepare this section was taken from various sources, including the Los Angeles County General Plan, various city general plans, agency and utility documents and plans, and written and verbal communication with various utility providers.

As discussed in Section 3.6.1, a Preliminary Screening Analysis (Appendix 1-A) was performed to determine impacts associated with the construction and operation of program and project elements by resource area. During preliminary screening, each element was determined to have no impact, a less than significant impact, or a potentially significant impact. Those elements determined to be potentially significant were further analyzed in this environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS analysis discloses the final impact determination for those elements deemed potentially significant in the Preliminary Screening Analysis. The location of the utilities, service systems, and energy impact analysis for each program element is summarized by Alternative in Table 20-1.

Table 20-1. Impact Analysis Location of Program Elements by Alternative

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Conveyance System								
Conveyance Improvements	X	X	X	X	X	N/A	C,O	C
SJCWRP								
Plant Expansion	X	X	X	X	X	N/A	C,O	C
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
POWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LCWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-
LBWRP								
Process Optimization	X	X	X	X	N/A	N/A	C,O	C
WRP Effluent Management	X	X	X	X	X	N/A	O	-

Table 20-1 (Continued)

	Alternative						Analysis Location	
Program Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
WNWRP								
WRP Effluent Management	X	X	X	X	X	N/A	O	-
JWPCP								
Solids Processing	X	X	X	X	X	N/A	C,O	C
Biosolids Management	X	X	X	X	X	N/A	O	-
JWPCP Effluent Management	X	X	X	X	N/A	N/A	Evaluated at the project level. See Table 20-2.	

WRP effluent management and biosolids management do not include construction.
[a] See Section 20.4.7 for a discussion of the No-Project Alternative.
[b] See Section 20.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

As discussed in Section 3.2.2, Joint Water Pollution Control Plant (JWPCP) effluent management was the one program element carried forward as a project. The location of the utilities, service systems, and energy impact analysis for each project element is summarized by Alternative in Table 20-2.

Table 20-2. Impact Analysis Location of Project Elements by Alternative

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**
Tunnel Alignment								
Wilmington to SP Shelf (onshore)	X				N/A	N/A	C,O	C
Wilmington to SP Shelf (offshore)	X				N/A	N/A	C,O	C
Wilmington to PV Shelf (onshore)		X			N/A	N/A	C,O	C
Wilmington to PV Shelf (offshore)		X			N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (onshore)			X		N/A	N/A	C,O	C
Figueroa/Gaffey to PV Shelf (offshore)			X		N/A	N/A	C,O	C
Figueroa/Western to Royal Palms (onshore)				X	N/A	N/A	C,O	C
Shaft Sites								
JWPCP East	X	X			N/A	N/A	C,O	C
JWPCP West			X	X	N/A	N/A	C,O	C
TraPac	X	X			N/A	N/A	C,O	C
LAXT	X	X			N/A	N/A	C,O	C
Southwest Marine	X	X			N/A	N/A	C,O	C
Angels Gate			X		N/A	N/A	C,O	C
Royal Palms				X	N/A	N/A	C,O	C
Riser/Diffuser Areas								
SP Shelf	X				N/A	N/A	C,O	C
PV Shelf		X	X		N/A	N/A	C,O	C
Existing Ocean Outfalls	X	X	X	X	N/A	N/A	C,O	-

Table 20-2 (Continued)

	Alternative						Analysis Location	
Project Element	**1**	**2**	**3**	**4**	**5[a]**	**6[b]**	**PSA**	**EIR/EIS**

[a] See Section 20.4.7 for a discussion of the No-Project Alternative.
[b] See Section 20.4.8 for a discussion of the No-Federal-Action Alternative.
PSA = Preliminary Screening Analysis
C = construction
O = operation
N/A = not applicable

20.2 Environmental Setting

20.2.1 Regional and Program Setting

The regional and program setting focuses only on those public utilities that could be affected by the Clearwater Program.

20.2.1.1 Potable Water

Water is imported to the Southern California area by the Metropolitan Water District of Southern California (MWD), which is a consortium of 26 member cities and districts. The MWD distributes more than 1.5 billion gallons of water annually to a service area encompassing 5,139 square miles that covers the Southern California coastal plain. This service area includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties (MWD 2008a).

Potable Water Supply

The MWD receives its water supply from a variety of sources. Most of the water imported by the MWD is from the Colorado River Aqueduct (CRA) and the State Water Project (SWP). In 2008, approximately 81 percent of the MWD water supply was provided from the imported waters of the CRA and SWP (MWD 2008b). California is apportioned 4.4 million acre-feet per year (AFY) of Colorado River water. Of that amount, between 550,000 AFY and 842,000 AFY are available to the MWD (MWD 2008c). The CRA has the capacity to divert 1.3 million AFY; in 2008, it provided approximately 890,000 AFY to California (MWD 2008b). The MWD receives deliveries of SWP supplies via the California Aqueduct at Castaic Lake in Los Angeles County and Diamond Valley Lake in Riverside County. The SWP is currently providing a dependable supply of about 35 percent of the total amount that the state has contracted to deliver. The MWD originally contracted to receive 2.01 million AFY of SWP water.[1]

Some of the imported water is augmented with local supplies such as recycled water and groundwater. Water recycling and groundwater recovery help to improve water reliability. There are 82 local water recycling and groundwater recovery projects that are expected to collectively produce about 364,000 AFY once fully implemented (MWD 2008b). During the MWD 2007/2008 fiscal year, approximately 164,000 AFY of recycled water and groundwater was provided to the service area. Since 1995, annual recycled water production has increased by approximately 10,000 AFY, while groundwater recovery has increased by approximately 6,000 AFY (MWD 2008b). The Sanitation Districts have been instrumental

[1] The initial 2010 allocation was 5 percent of that amount, or approximately 95,500 AF (DWR 2009). This was increased through the year to a final allocation of 50 percent, or approximately 955,700 AF (DWR 2010a). The initial 2011 allocation was 25 percent, or approximately 478,000 AF (DWR 2010b), and it has since been increased to 50 percent, or approximately 955,700 AF (DWR 2010c).

in the effort to promote water reuse, and the reliance on recycled water is anticipated to increase through 2050. Almost 50 years ago, the Sanitation Districts started working with the Los Angeles County Flood Control District and the Water Replenishment District of Southern California to replenish groundwater supplies using locally captured stormwater, recycled water, and imported water. The Sanitation Districts send recycled water to the Rio Hondo Spreading Grounds and the San Gabriel Coastal Spreading Grounds in the cities of Montebello and Pico Rivera to recharge the groundwater basin. In addition to the 1.5 million AF of recycled water that have supplemented the groundwater supplies over the past 50 years, the Sanitation Districts work with dozens of cities and water agencies to supply over 650 sites with recycled water for municipal and industrial uses. Based on current trends, recycled water is likely going to become a larger percentage of the regional water supply through 2050.

Water supplies for the MWD are estimated by using the supply provided during the single driest year and the multiple dry year hydrology scenarios (MWD 2008b). As shown in Table 20-3, the MWD has a level of reliability that extends through 2030 (MWD 2008b) under the driest of scenarios. The MWD has also identified buffer supplies, including additional SWP groundwater storage and transfers, which is later described in Table 20-6, and could serve to supply the additional water needed.

Table 20-3. Projected MWD Water Supply (Million Acre-Feet per Year)

Scenario	Existing 2010	2020	2030
Single Dry Year[a]	3.15	3.31	3.20
Multiple Dry Year[b]	2.70	2.80	2.74

[a] For this estimate, the MWD used the single driest year scenario to estimate projected demands and supplies. Hydrological conditions experienced in 1977 were used for these projections.
[b] For this estimate, the MWD used the driest multiple year scenario to estimate projected demands and supplies. Hydrological conditions experienced between 1990 and 1992 were used for these projections.
Source: MWD 2005

Potable Water Demand

Potable water demand in the MWD service area fluctuates due to population increases and weather patterns (MWD 2008b); however, it is expected that potable water demand will generally increase through 2030. The estimated demands for 2010, 2020, and 2030 for single and multiple dry years, as well as average years, within the MWD service area are described in Table 20-4.

Table 20-4. Projected MWD Water Demand (Million Acre-Feet per Year)

Scenario	2010	2020	2030
Single Dry Year[a]	2.32	2.23	2.50
Multiple Dry Year[b]	2.39	2.31	2.59
Average Year	2.03	1.98	2.25

[a] For this estimate, the MWD used the single driest year scenario to estimate projected demands and supplies. Hydrological conditions experienced in 1977 were used to estimate these projections.
[b] For this estimate, the MWD used the driest multiple year scenario to estimate projected demands and supplies. Hydrological conditions experienced between 1990 and 1992 were used to estimate these projections.
Source: MWD 2005:II-8 through II-10

Potable Water Reliability

The MWD regularly prepares a number of reports that provide the status of its current and future water demands and supplies including but not limited to: The Regional Urban Water Management Plan (MWD 2005, update in 2010), and the Integrated Resources Plan (1996, update in 2004 and update in 2010) and the Annual Reports (MWD 2008b). The MWD has shown that its water supplies are fully

reliable to meet the anticipated demand of its customers under all weather conditions through at least 2030 (MWD 2008b). The projected water supply and demand are compared in Table 20-5.

Table 20-5. Projected Water Reliability (Million Acre-Feet per Year)

Scenario	2010	2020	2030
Single Dry Year[a] Supply	3.15	3.31	3.20
Single Dry Year Demand	2.32	2.23	2.50
Single Dry Year Difference	**0.83**	**1.08**	**0.70**
Multiple Dry Year[b] Supply	2.70	2.80	2.74
Multiple Dry Year Demand	2.39	2.31	2.59
Multiple Dry Year Difference	**0.31**	**0.49**	**0.15**

[a] For this estimate, the MWD used the single driest year scenario to estimate projected demands and supplies. Hydrological conditions experienced in 1977 were used for these projections.

[b] For this estimate, the MWD used the driest multiple year scenario to estimate projected demands and supplies. Hydrological conditions experienced between 1990 and 1992 were used for these projections.

Source: MWD 2005:II-8 through II-10

The Colorado River has experienced below-average precipitation conditions for most of the past decade (MWD 2010). The SWP has faced historic regulatory cutbacks significantly reducing its supplies that pass through the Sacramento-San Joaquin Delta in Northern California (MWD 2010). This has affected MWDs supplies, resulting in the cessation of imported water deliveries for groundwater replenishment in May 2007, with mandatory conservation in place throughout much of the service area by 2009 (MWD 2010). However, MWD's planning and regular evaluation of its supplies accounts for these types of uncertainties.

Regional resources help maintain future supply and reliability. The regional resources are listed with a brief description in Table 20-6.

Table 20-6. Summary of Regional Resources

Title	Description
Local Resources	
Groundwater	Member agencies use groundwater from the groundwater basins within MWD's service area.
Groundwater Recovery Program	The goal is to recover lost groundwater supplies to groundwater contamination via treatment of the contamination and prevent future contamination of groundwater aquifers.
Individual Wastewater Reclamation Projects/Water Recycling Projects	Recycled water projects deliver highly treated wastewater for various uses.
Modified Irrigation Practices and Land Fallowing	In return for compensation from the MWD, farmers served by the Imperial Irrigation District could enter into contracts whereby they agree not to irrigate their crops for a 75-day period during summer.
Lower Basin Agreement	In 2007, the MWD signed an agreement with other water agencies in the Lower Colorado River Basin to improve water management capabilities and allow some of those agencies to develop and store new water supplies in Lake Mead. The agreement also allows water agencies to cooperate on water conservation projects.
Drop 2 Reservoir Project	In May 2008, the MWD partnered with the Southern Nevada Water Authority and the Central Arizona Water Conservation District to fund the Drop 2 Reservoir Project, which will help conserve water currently lost from the system. In exchange for its share of funds, the MWD received storage credits in Lake Mead.

Table 20-6 (Continued)

Title	Description
Los Angeles Aqueduct	Water is conveyed from the Owens Valley via the Los Angeles Aqueduct by the Los Angeles Department of Water and Power and is provided to the MWD.
Conservation	The MWD and member agencies sponsor numerous conservation programs in the region that involve incentives and consumer behavior modification.
Colorado River Resources	
Colorado River Aqueduct	The MWD has contracts with the federal Bureau of Reclamation for a proportioned amount of water. However, the MWD may receive water unused by Arizona, Nevada, or higher priority users in California or surplus water as available.
Interstate Underground Storage of Unused Colorado River Water	Arizona, California, and Nevada are discussing the feasibility of increasing the underground storage of unused Colorado River water.
State Resources	
State Water Project Programs	The MWD currently has a water supply contract with the California Department of Water Resources, subject to availability.
Central Valley Storage and Transfer Programs	The MWD continues to administer five existing SWP storage programs located outside of its service area: ▪ Semitropic/MWD Water Banking and Exchange Program ▪ Arvin-Edison Water Management Program ▪ San Bernardino/MWD Coordinated Operating Agreement ▪ Kern Delta/MWD Water Management Program ▪ Mojave/MWD Demonstration Water Exchange Program
Other Resources	
Surface Water Storage	The MWD has reservoirs to store water and has flexible storage using DWR reservoirs.
Groundwater Conjunctive Use Storage Programs	The MWD sponsors various groundwater storage programs including long-term replenishment storage programs, contractual conjunctive use programs, and cyclic storage programs.
Source: MWD 2008b; MWD 2010	

Water demand in the MWD service area would be met throughout 2030 through the use of SWP and CRA water supplies, as well as the existing and planned conservation measures, the programs discussed in Table 20-6, and local water sources.

20.2.1.2 Stormwater

The storm drain system for the county of Los Angeles, primarily maintained by the Los Angeles County Department of Public Works Flood Control District, encompasses more than 3,000 square miles, 85 cities, and approximately 2.1 million parcels of land. It includes a vast system of drainage infrastructure within incorporated and unincorporated areas in every watershed, with 500 miles of open channel, 2,800 miles of underground storm drains, and an estimated 120,000 catch basins (LACDPW 2010a). Stormwater discharges include flow through pipes and channels or sheet flow over a surface. The regional stormwater runoff generally flows from drainage systems into the Los Angeles River and the San Gabriel River. The Los Angeles River ultimately discharges into the Pacific Ocean near the Port of Long Beach, and the San Gabriel River flows southwesterly from its headwaters in the San Gabriel Mountains and ultimately discharges into the Pacific Ocean at Seal Beach.

The LACDPW is responsible for the design, construction, operation, and maintenance of flood control, water conservation, and local sewer facilities within the county. LACDPW provides services to nine tax zones in unincorporated areas as well as to 42 contract cities within the county (LACDPW 2010b). The principal permitting group within the LACDPW for stormwater discharge approval is the watershed management division. The watershed management division reviews and approves various municipal

stormwater permits within the county, including National Pollutant Discharge Elimination System (NPDES) permits, for sites that discharge into the Los Angeles County Flood Control District's storm drain system. The NPDES program, created through the Clean Water Act, requires that runoff from construction sites or industrial sources be eliminated or regulated under a stormwater permit. It requires identification and control of non-point sources of pollutants discharging into flood control drainage systems. See Section 20.3 for additional information regarding the Clean Water Act and the NPDES program.

Flood control districts, the California Department of Transportation, and local agencies generally have maintenance responsibility for storm drain systems within cities. However, the LACDPW coordinates responsibilities with multiple cities and jurisdictions under the NPDES permit program for stormwater/urban runoff discharges. There are additional programs implemented to monitor urban runoff and improve surface drainage in the unincorporated areas (LACDPW 2010b).

One of the main storm drains and flood control channels in the Los Angeles County area is the Wilmington Drain. The drain runs between the JWPCP and Interstate (I-) 110. The Wilmington Drain is part of the Machado Lake ecosystem, which functions as a flood control system. Machado Lake is composed of upper and lower basins separated by a low earthen dam. The upper basin contains a 40-acre recreational lake created by the impoundment of stormwater runoff; the lower basin is a freshwater marsh of approximately 60 acres. During major storms, stormwater overflows the dam into the lower basin and to the Harbor Outfall. The Harbor Outfall conveys runoff in an underground storm drain to the West Basin of the Port of Los Angeles. (CDM 2009.) During low flows, the Wilmington Drain occasionally requires pumping to move water into Machado Lake (MEC 2004:2-100). The Wilmington Drain is a 150-foot-wide soft bottom vegetated channel with non-native plants and rip-rap-filled gabions north of Pacific Coast Highway. North of I-110, the channel is concrete lined.

Another important storm drain in the region is the Dominguez Channel. This channel is generally located to the north of I-405 and the JWPCP and east of I-110 and the JWPCP. It begins at 116th Street in the city of Hawthorne and continues in a southwesterly direction until it empties into the Consolidated Slip and East Turning Basin at the Port of Los Angeles. Some reaches of the channel are unlined, but it is primarily constructed of concrete. The concrete portion varies between a vertical-sided channel to a trapezoidal channel. The bottom of the channel is between 75 and 90 feet wide. The channel is designed to handle 50-year storm events. (MEC 2004.)

Each of the Sanitation Districts' water reclamation plants (WRPs)[2] and the JWPCP have existing stormwater collection and conveyance systems to handle stormwater created by impervious surfaces on site, such as parking lots and buildings. There are some pervious surfaces at the WRPs as well; these pervious surfaces generate much less stormwater runoff because they allow rainwater to percolate into the ground. These areas include a maintained lawn at the San Jose Creek WRP (SJCWRP), a driving range near the Los Coyotes WRP (LCWRP), disturbed soil and ruderal vegetation near the Long Beach WRP (LBWRP) and JWPCP, and asphalt and disturbed soil near the Pomona WRP (POWRP). On-site stormwater conveyance systems at the WRPs and the JWPCP are typically connected to adjacent off-site, regional storm drain systems. There is an existing wetland at the JWPCP located in the northwestern portion of the site but it does not receive stormwater runoff from the plant.

[2] The La Cañada WRP is exempt from an Industrial General Permit because the permit does not cover WRPs designed for less than 1 MGD. In addition, all rainfall is used as irrigation, resulting in no stormwater discharges.

20.2.1.3 Energy (Electricity)

Two suppliers, Southern California Edison (SCE) and the Los Angeles Department of Water and Power (LADWP), provide most of the electricity consumed in the Joint Outfall System (JOS) service area.

Southern California Edison

SCE is one of the largest electric utilities in California, serving the majority of Southern California, including all of Ventura County, and most of San Bernardino, Los Angeles, and Orange Counties. SCE customers total more than 14 million people over a 50,000 square mile area. The SCE service territory includes more than 180 cities (SCE 2010). Within the county of Los Angeles, SCE is the main provider; however, the city of Los Angeles is serviced through the LADWP, which is discussed in further detail later in the section.

SCE's projections for existing supply and demand as well future projections through 2030 are described in Table 20-7. SCE is projected to have adequate supply to provide for projected demands in the region. Climate scenarios are differentiated between average weather and adverse weather patterns; in adverse weather patterns, temperatures are hotter or colder than average and are likely to produce increased electricity demand.

Table 20-7. Southern California Edison Projected Supply and Demand (Kilovolt-Amps)[a]

	Climate Scenario	2010	2020	2030
Supply	Average	34,635,000	39,835,000	45,035,000
	Adverse	33,829,000	38,895,000	43,965,000
Demand	Average	30,950,000	35,590,000	40,230,000
	Adverse	32,860,000	37,790,000	42,720,000

The estimates and projections in this table are based on assumptions made through the 2006 Long Term Procurement Plan [LTPP], which only forecasts supply and demand through 2016. The 2006 LTPP does not include changes to supply and demand projections that would occur due to the current economic conditions or increased renewable energy requirements. Through direct communication with SCE, additional information on average yearly increases [approximately a 1.5% average increase] assisted in creating projection estimates.

[a] Original demand and supply numbers were in megawatts (MW). For the purposes of this document, they were converted to kilovolt-amps (kVA). KVA are units used to rate generator strength. MW are a unit of power and the rate at which energy is used. Approximately 1 MW is equal to 1,000 kVA.

Source: SCE 2006; Cunningham pers. comm.

SCE has planned major infrastructure and replacement projects, including a proposed investment of $20 billion during the coming years to update the region's distribution and transmission grids to provide for the growth of electricity demand in the region (SCE 2010) and renewable energy supply requirements. The different transmission projects and substation projects within the SCE planning region are described in Table 20-8.

Table 20-8. Southern California Edison's Projects to Increase Supply and Efficiency

Project Type	Description	Status
Transmission		
Tehachapi Renewable Transmission Project Segments 1-3	New and updated transmission lines that will deliver electricity from wind farms in the Tehachapi area.	Segments 1, 2, and 3a are completed and energized.
Tehachapi Renewable Transmission Project Segments 4-11	New and updated transmission lines that would deliver electricity from wind farms in Kern County.	Approved by the CPUC in 2009; awaiting approvals by the United States (U.S.) Forest Service. Completion is expected in 2015.
Substation		
Presidential Substation Project	Development of a 66/16 kV substation and 3.5 miles of 66 kV subtransmission line route.	Application was submitted to CPUC in December 2008. It is expected to be operational by 2012.
Kimball Substation Project	Development of a 66/12 kV substation and upgrade existing 66 kV subtransmission line route.	Completed
Ritter Ranch Substation Project	Development of a 66/12 kV substation and 66 kV subtransmission line route.	Completed

kV = kilovolt
CPUC = California Public Utilities Commission
Source: SCE 2011

The completion of these projects, along with the projected power supply, is expected to aid in the provision of electricity for the region's increased demand through 2030 and beyond.

Los Angeles Department of Water and Power

The LADWP provides electrical service through an extensive system of transmission and distribution lines in a service area of approximately 465 square miles. The LADWP delivers more than 22 million megawatt (MW) hours of electricity a year to its 1.4 million customers in the city of Los Angeles (LADWP 2010). The LADWP recently approved its 2007 Power System Integrated Resource Plan (IRP) for the entire service area. This energy resource planning document provides a framework for assuring that the future energy needs of the service area are met (LADWP 2007a). The 2007 IRP estimates that electricity in the LADWP service area will increase at an average rate of 0.9 percent per year (LADWP 2007b). The 2007 IRP focuses on objectives to meet demand throughout 2012, and more broadly through 2027. Additional details regarding the LADWP demand and supply are described in Section 20.2.2.2.

20.2.2 Project Setting

The various utility service providers for each project element are summarized in Table 20-9.

Table 20-9. Project Level Utility Providers

Project Element	Potable Water Service Provider	Electrical Service Provider	Stormwater Service Provider
Tunnel Alignment			
Wilmington to SP Shelf	CalWater/LADWP	SCE/LADWP	City of Los Angeles
Wilmington to PV Shelf	CalWater/LADWP	SCE/LADWP	City of Los Angeles
Figueroa/Gaffey to PV Shelf	LADWP	LADWP	City of Los Angeles
Figueroa/Western to Royal Palms	LADWP	LADWP	City of Los Angeles

Table 20-9 (Continued)

Project Element	Potable Water Service Provider	Electrical Service Provider	Stormwater Service Provider
Shaft Site			
JWPCP East	CalWater	Sanitation Districts[a]/SCE	City of Carson
JWPCP West	LADWP	LADWP	City of Los Angeles
TraPac	LADWP	LADWP	City of Los Angeles
LAXT	LADWP	LADWP	City of Los Angeles
Southwest Marine	LADWP	LADWP	City of Los Angeles
Angels Gate	LADWP	LADWP	City of Los Angeles
Royal Palms	LADWP	LADWP	City of Los Angeles
Riser and Diffuser Area[b]			
SP Shelf	N/A	N/A	N/A
PV Shelf	N/A	N/A	N/A
Existing Ocean Outfalls	N/A	N/A	N/A

[a] The JWPCP is partially powered by methane-containing digester gas, a byproduct of the treatment process.
[b] Utilities are not provided to the riser and diffuser areas because they are located in the ocean and do not receive service. Therefore, describing the existing utilities setting for the riser and diffuser areas is not needed. Furthermore, utility services that would be provided during the construction of the riser and diffuser area would come from the providers identified above.
CalWater = California Water Service Company
N/A = not applicable

A description of existing project element utility demand in the various service areas is provided in Table 20-10. Typically, there is no existing utility demand for the project elements because most of the project element locations are vacant or underutilized areas.

Table 20-10. Existing Utility Demand of Project Elements

Project Element	Existing Potable Water Demand	Existing Electrical Demand	Existing Stormwater Generation
Tunnel Alignment			
Wilmington to SP Shelf	None – located in subsurface	None – located in subsurface	None – located in subsurface
Wilmington to PV Shelf	None – located in subsurface	None – located in subsurface	None – located in subsurface
Figueroa/Gaffey to PV Shelf	None – located in subsurface	None – located in subsurface	None – located in subsurface
Figueroa/Western to Royal Palms	None – located in subsurface	None – located in subsurface	None – located in subsurface
Shaft Site			
JWPCP East	None – vacant area	None – vacant area	Pervious surface[a] – disturbed vacant soil
JWPCP West	None – vacant area	None – vacant area	Pervious surface[a] – disturbed vacant soil
TraPac	None – container storage area	None – container storage area	Impervious surface[b] – completely paved with asphalt or concrete
LAXT	None – vacant terminal, currently unused	None – vacant terminal, currently unused	Primarily impervious surface – paved with asphalt or concrete
Southwest Marine	None – vacant area next to Berths 243 to 245	None – vacant area next to Berths 243 to 245	Primarily impervious surface – paved with asphalt or concrete

Table 20-10 (Continued)

Project Element	Existing Potable Water Demand	Existing Electrical Demand	Existing Stormwater Generation
Angels Gate	None – parking lot	None – parking lot with no lights	Impervious surface – parking lot paved with asphalt
Royal Palms	None – vacant area	Parking lot lights	Pervious surface – previously disturbed soil with ruderal vegetation
Riser and Diffuser Area[c]			
SP Shelf	N/A	N/A	N/A
PV Shelf	N/A	N/A	N/A
Existing Ocean Outfalls	N/A	N/A	N/A

[a] Pervious surfaces allow stormwater to percolate into the ground and do not typically generate stormwater runoff, or generate stormwater to a lesser extent when compared with completely impervious surfaces.

[b] Impervious surfaces generate stormwater because the stormwater does not percolate into the ground but rather runs off into the existing stormwater drainage system.

[c] Utilities are not provided to the riser and diffuser areas because they are located in the ocean and do not receive service. Therefore, describing the existing utilities demand for the riser and diffuser areas is not needed.

N/A = not applicable

20.2.2.1 Potable Water

California Water Service Company

California Water Service Company (CalWater) provides water supply services to the JWPCP through the Rancho Dominguez District. The Rancho Dominguez District is located at the southern portion of the Los Angeles coastal plain in the area known as the South Bay. The district's 35-square-mile service area is located 5 to 10 miles inland from the Los Angeles Harbor and includes most of the city of Carson; a large section of the city of Torrance; small sections of the cities of Compton, Long Beach, and Los Angeles; and a portion of Los Angeles County. (CalWater 2006.)

The Rancho Dominquez District system uses groundwater, purchased imported water, and recycled water. Groundwater is extracted from the West Coast and Central Groundwater Basins. West Basin Municipal Water District serves as the regional wholesaler and developer of local supplies. (CalWater 2006.)

CalWater's projected total water demand is forecasted in its urban water management plan (UWMP) (see Section 20.3.1.4). Water demand for the Rancho Dominquez District is based on multiplying the forecast of projected services for each customer class by the anticipated demand per service for that class. CalWater's Rancho Dominguez District annual water demand and supply throughout 2025 is shown in Table 20-11. (CalWater 2006.)

Table 20-11. CalWater's Rancho Dominguez District Projected Annual Maximum Daily Water Demand and Supply (Acre-Feet per Year)

Year	2010	2020	2025
Supply	39,774	44,489	47,132
Demand	33,819	37,672	39,825
Difference	5,955	6,817	7,307

Source: CalWater 2005

Los Angeles Department of Water and Power

The LADWP provides water service to the city of Los Angeles, as well as to portions of Culver City, South Pasadena, and West Hollywood. It also provides water services to the Port of Los Angeles and the community of San Pedro. The LADWP provides water services to over 640,000 customers covering a 295,000-acre service area. Distribution mains are located throughout the project area. Water sources utilized by the LADWP include local sources, such as wells and recycled water (for nonpotable uses), and imported sources, including the Los Angeles Aqueduct and purchases from the MWD (LADWP 2007a).

The LADWP has invested in various sources to supply water, including groundwater replenishment, recycled water, and water conservation. Water demand and supply calculations in its 2005 UWMP (see Section 20.3.1.4) are based on assumptions regarding the various supplies of water available and existing and projected levels of water conservation. Based on these calculations, the LADWP has predicted service reliability for average and single-dry-year conditions. Existing and future supply and demand assumptions are described in Table 20-12. The LADWP expects to be able to meet future demand with a combination of existing supplies, planned supplies, and MWD purchases (LADWP 2005).

Table 20-12. LADWP Existing and Projected Water Supply and Demand (Acre-Feet per Year)

	2005	2030 (Average)	2030 (Dry)
Supply	700,000	897,200	934,200
Demand	683,000	776,000	776,000
Difference	17,000	121,200	158,200

Source: LADWP 2005

20.2.2.2 Energy (Electricity)

Sanitation Districts

Electricity is used at the JWPCP to power equipment such as pumps, biosolids collection equipment, centrifuges, compressors, aerators, and miscellaneous motor drives. Existing electricity consumption at the JWPCP totals approximately 120 gigawatt hours (GWh) annually. The electricity used at the JWPCP is a combination of that purchased from SCE and that generated on site by a combined-cycle power plant that converts digester gas to electricity. Existing electricity production capacity at the JWPCP currently totals approximately 162 GWh annually, allowing for excess production of approximately 42 GWh annually to be available to the local power grid through sales agreements with the electric utility (Parsons 2011).

Los Angeles Department of Water and Power

The LADWP service area for electricity includes the city of Los Angeles. The LADWP supplies nearly 22 billion kilowatt hours (kWh) of electricity per year for the city's 1.4 million electric customers (LADWP 2007b). The LADWP maintains various generating and distribution substations throughout the greater Los Angeles area, including generating and distribution centers in and near the Port of Los Angeles. For example, the Harbor Generating Station is located within the Port of Los Angeles at 161 North Island Avenue in Wilmington. The current and future demand and supply for LADWP electricity is described in Table 20-13.

Table 20-13. Los Angeles Department of Water and Power Electricity Supply and Demand (Kilovolt-Amp)[a]

	Existing - 2007	2020	2027
Supply	7,560,000	7,721,000	7,710,000
Demand	6,239,000	6,876,000	7,294,000

[a] Original demand and supply numbers were in megawatts (MW). For the purposes of this document, they were converted to kilovolt-amps (kVA). Kilovolt-amps are units used to rate generator strength. MW are a unit of power and the rate at which energy is used. Approximately 1 MW is equal to 1,000 kVA.

Source: LADWP 2007b

20.2.2.3 Stormwater

Please refer to the regional discussion in Section 20.2.1.2 for a description of existing conditions related to stormwater.

20.3 Regulatory Setting

20.3.1 Federal and State

The MWD, the LADWP, and CalWater are responsible for meeting federal and state laws and regulations regarding water supply and water quality. Such regulations include water supply treatment system testing and monitoring, as specified in Title 23, Division 4, Chapter 1, Article 4 of the California Code of Regulations (CCR), and federal regulations promulgated by the Environmental Protection Agency (EPA).

Federal and state agencies regulate water supply and consumption through various programs. At the federal level, the EPA is the main regulatory agency with oversight on water supply and control through the Clean Water Act. At the state level, the California State Water Resources Control Board (SWRCB) and the California Department of Water Resources (DWR) have authority over different aspects of water. The SWRCB provides comprehensive protection for California's waters through joint authority of water allocation and water quality protection. The DWR provides urban water management planning services to local and regional urban water suppliers, in accordance with the Urban Water Management Planning Act. Other, smaller agencies such as the MWD and the LADWP provide regulations for water management and protection at a regional level.

Federal and state agencies regulate energy use and consumption through various means and programs. At the federal level, the United States Department of Transportation, the United States Department of Energy, and the EPA are three federal agencies with substantial influence over energy policies and programs. Generally, federal agencies influence and regulate transportation energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, funding of energy-related research and development projects, and funding for transportation infrastructure improvements. At the state level, the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) have authority over different aspects of energy. The CPUC regulates privately owned utilities in the energy, rail, telecommunications, and water fields. The CEC collects and analyzes energy-related data, prepares statewide energy policy recommendations and plans, promotes and funds energy efficiency programs, and adopts and enforces appliance and building energy efficiency standards.

20.3.1.1 Clean Water Act

The Clean Water Act sets discharge limitations, requires states to establish and enforce water quality standards, sets the framework for the NPDES permit program for municipal and industrial point-source discharges, and requires NPDES permits for municipal and industrial discharges and for stormwater discharges caused by general construction activity.

The NPDES program was mandated by Congress under the Clean Water Act. NPDES is a comprehensive program for addressing the non-agricultural sources of stormwater discharges adversely affecting the quality of the nation's waters. The program uses the NPDES permitting mechanism to require the implementation of control and monitoring measures designed to prevent harmful pollutants from being washed into local water bodies by stormwater runoff. To enforce the requirements of the Clean Water Act and NPDES related to stormwater, the SWRCB has implemented the State General Permit for industrial stormwater discharges. All qualifying industrial facilities in the state, including the WRPs and JWPCP, must comply with the requirements of the State General Permit.

Additionally, the Clean Water Act includes a stormwater program to address stormwater discharges associated with construction and land disturbance activities (Construction General Permit). The Construction General Permit is required for all construction projects with a total soil disturbance of 1 acre or greater. Through this permit, the owner or operator is required to develop a stormwater pollution prevention plan (SWPPP) that incorporates best management practices (BMPs) to reduce or remove pollutants from stormwater discharges during construction or land disturbance activities.

20.3.1.2 Senate Bill 610 and Water Code Sections 10910 – 10915

Senate Bill 610 amended the California Water Code Sections 10910 – 10915 to require the preparation of a 20-year water supply assessment for certain projects, generally those involving a water demand equivalent to 500 dwelling units or more, demonstrating available water supplies exist to support the proposed development that meets specific criteria outlined in the Water Code sections. The Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001 (DWR 2003) identifies that one dwelling unit typically consumes 0.3 to 0.5 AFY of water, depending upon several factors, including regional climate.

20.3.1.3 Water Conservation Projects Act

The state of California's requirements for water conservation are codified in the Water Conservation Projects Act of 1985 (Water Code Sections 11950 – 11954), as reflected below:

> 11952. (a) It is the intent of the Legislature in enacting this chapter to encourage local agencies and private enterprise to implement potential water conservation and reclamation projects.

20.3.1.4 California Urban Water Management Act

The California Urban Water Management Planning Act requires urban water suppliers to initiate planning strategies that make every effort to ensure the appropriate level of reliability in their water service sufficient to meet the needs of their various categories of customers during normal, dry, and multiple dry-water years. The California Urban Water Management Planning Act requires water suppliers to develop water management plans every 5 years and to include an analysis of water supply reliability and

water use efficiency measures. MWD would be the regional wholesale water supplier, and CalWater and LADWP would be the retail water suppliers; as such, the project would be under the jurisdiction of the MWD UWMP, the CalWater UWMP, and the LADWP UWMP, all prepared pursuant to the California Urban Water Management Planning Act.

MWD Urban Water Management Plan

Consistent with the California Urban Water Management Planning Act, the MWD has prepared a regional UWMP to describe how water resources are used and to present strategies that will be used to meet the region's current and future water needs. The MWD UWMP focuses primarily on water supply reliability and water use efficiency measures. The most recent MWD UWMP is the 2005 UWMP. It was completed as an update to the previous 2000 UWMP to comply with the Urban Water Management Planning Act.

CalWater Urban Water Management Plan

Consistent with the California Urban Water Management Planning Act, CalWater has prepared an UWMP to describe how water resources are used within the district and to present strategies that will be used to meet the district's current and future water needs. The CalWater UWMP includes a discussion of water supply reliability and water demand management. The CalWater Rancho Dominguez District, per approval by the CPUC, is on a 3-year update cycle (CalWater 2006). CalWater most recently completed its update in January 2006.

LADWP Urban Water Management Plan

Consistent with the California Urban Water Management Planning Act, the LADWP has prepared an UWMP to describe how water resources are used and to present strategies that will be used to meet the city's current and future water needs. The LADWP UWMP focuses primarily on water supply reliability and water use efficiency measures. The 2005 UWMP was completed as an update to the previous 2000 UWMP to comply with the Urban Water Management Planning Act. The LADWP also published annual fiscal year updates in the 2005 UWMP.

20.3.1.5 California's Building Code (24 CCR Part 6)

Title 24, Part 6, of the California Building Code describes California's energy efficiency standards for residential and nonresidential buildings. These standards were established in 1978 in response to a legislative mandate to reduce California's energy consumption and have been updated periodically to include new energy efficiency technologies and methods. Title 24 requires energy efficient standards for all new construction, including new buildings, additions, alterations, and, in nonresidential buildings, repairs.

20.3.2 Regional

20.3.2.1 Construction Activity Control Program

The Los Angeles Regional Water Quality Control Board (LARWQCB) issued a Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (RWQCB 1994). Included within this plan is the Construction Activity Control Program for managing urban runoff into storm drains. According to the Construction Activity Control Program, major construction activities include the development or redevelopment of residential, commercial, and industrial areas, as well as transportation facilities. The LARWQCB requires, pursuant to NPDES stormwater regulations, an NPDES permit for the discharge of stormwater from all construction activities, including demolition, clearing and excavation, and grading.

The majority of construction activity discharges in the Los Angeles region are covered under the SWRCB general permit (LARWQCB 1994).

20.3.2.2 Standard Urban Stormwater Mitigation Plan

On December 13, 2001, the LARWQCB issued a Municipal Stormwater NPDES Permit (NPDES Permit No. CAS004001) that requires new development and redevelopment projects to incorporate stormwater mitigation measures.

Depending on the type of project, either a Standard Urban Stormwater Mitigation Plan or a Site-Specific Mitigation Plan is required to reduce the quantity and improve the quality of rainfall runoff that leaves the site. Developers are encouraged to begin work on complying with these regulations by consulting with the Watershed Protection Division in the design phase of their projects.

20.3.2.3 Storm Water Pollution Prevention Plan

A SWPPP is generally required as part of a construction permit for large projects or facilities that are within a drainage basin of a water of the United States. The SWPPP emphasizes the use of appropriately installed and maintained stormwater pollution reduction BMPs. See Chapter 11 for additional information on SWPPPs.

20.3.2.4 The County of Los Angeles Municipal Code

Appendix J of the Los Angeles Municipal Code includes a discussion of grading and erosion control measures during construction. The following sections of this appendix relate to the project elements:

- J101.7 Storm Water Control Measures (Ord. 2007-0108, Section 33 [part], 2007)
- J111.1 General (Ord. 2007-0108, Section 33 [part], 2007)
- J111.2 Storm Water Pollution Prevention Plan (Ord. 2007-0108, Section 33 [part], 2007)
- J111.3 Wet Weather Erosion Control Plans (Ord. 2007-0108, Section 33 [part], 2007)

These sections generally outline that grading plans and permits will comply with the NPDES and all BMPs will be installed before grading begins. Details associated with each of these sections are discussed in Chapter 11.

20.3.2.5 The City of Pomona Municipal Code

The City of Pomona Municipal Code includes a discussion of discharge regulations and requirements in relation to stormwater management. Article X of Chapter 18 of the Code, Section 18-495 (3) to (5), relates to stormwater regulations. This article requires BMPs for new development and redevelopment, notification of intent and compliance with general permits, and compliance with BMPs (Code 1959, Section 35-12; Ord. No. 3735, Section 1 [part]). Details associated with this article are discussed in Chapter 11.

20.3.2.6 The City of Cerritos Municipal Code

The City of Cerritos Municipal Code includes a discussion of stormwater and urban runoff prevention controls under Chapter 6.32 in relation to stormwater management. Section 6.32.050, Construction Site Requiring Building Permit and/or Grading Plan, relates to stormwater regulations within the project. This

chapter identifies specific BMPs to be employed during construction and requires a NPDES construction permit to be obtained from the LARWQCB prior to the issuance of grading and/or building permits. Details associated with this chapter are discussed in Chapter 11.

20.3.2.7 The City of Long Beach Municipal Code

The City of Long Beach Municipal Code includes a discussion of construction development requirements as they relate to the NPDES and standard urban stormwater mitigation plan regulations under Chapter 18.395, Section 18.95.050, Development Construction. This chapter discusses the BMPs to be employed during construction and the use of the California Storm Water Best Management Practice Handbooks (Construction Activity) (1993). Details associated with this chapter are discussed in Chapter 11 (Ord. C-7823, Section 129, 2002; Ord. C-7712, Section 2, 2000; Ord. C-7703, Section 1, 2000).

20.3.2.8 The City of Carson Municipal Code

Chapter 8 of the City of Carson Municipal Code includes ordinances dedicated to stormwater and urban runoff pollution control. The ordinances within this chapter that relate to the project elements include requirements for industrial/commercial and construction activities (Ord. 96-1101, Section 1). Details associated with this chapter are discussed in Chapter 11.

20.3.2.9 The City of Los Angeles Municipal Code

Chapter IX of the City of Los Angeles Municipal Code includes ordinances that relate to the reduction of stormwater runoff during construction. Two ordinances of the municipal code relate to project elements: Ordinance 172.673 (effective July 30, 1999) and Ordinance 179.324 (effective December 10, 2007). The first ordinance requires the use of provisions contained in the Development Best Management Practices Handbook, Part A, during construction activities. The second ordinance gives the city the ability to withhold grading and/or building permits for developments until applicants incorporate BMPs necessary to control stormwater pollution. Details associated with the ordinances are discussed in Chapter 11.

20.4 Environmental Impacts and Mitigation Measures

20.4.1 Methodology and Assumptions

The potential impacts associated with the Alternatives are evaluated on a quantitative and qualitative basis. Assessment of the impacts on utilities (water and stormwater) and energy providers (electricity) varies depending on the utility but generally includes a comparison of the project-generated demand against existing and anticipated resource supplies and/or conveyance capacity. Significant impacts would occur if the Alternative would adversely affect the ability of service agencies to provide adequate service to the project site or other existing service areas, and expansions or upgrades would cause significant adverse physical impacts. These impacts are assessed through the significance criteria established for the program and project as defined under Section 20.4.2.

For Alternatives 1 and 2, two tunnel boring machines (TBMs) would be used to construct the onshore and offshore tunnel alignments. There are two possible scenarios under which the two TBMs could be used.

- One TBM would be launched at the JWPCP East shaft site and progress south to the Los Angeles Export Terminal (LAXT) shaft site. The second TBM would be launched from the LAXT shaft site and progress south to the riser and diffuser area.
- Two TBMs would be launched from the LAXT shaft site. One would progress north and exit at the JWPCP East shaft site, and one would progress south to the riser and diffuser area.

Because each of these scenarios is reasonably foreseeable, they are both analyzed. Therefore, one TBM is analyzed at the JWPCP East shaft site, and two TBMs are analyzed at the LAXT shaft site. These assumptions provide a conservative impact analysis evaluating the maximum utility demand in different service areas associated with the construction of the project.

For Alternatives 3 and 4, it is assumed one TBM would be used and would start at the JWPCP West shaft site and progress until it reached either the riser and diffuser location on the PV Shelf (Alternative 3) or the Royal Palms shaft site (Alternative 4).

20.4.1.1 Energy Conservation

In order to ensure that energy use is considered in project decisions, the California Environmental Quality Act (CEQA) requires that environmental impact reports (EIRs) include a discussion of the potential energy impacts of proposed projects. In 1975, the state legislature adopted Assembly Bill 1575, which amended Public Resources Code Section 21100 (b)(3) to require EIRs to consider the wasteful, inefficient, and unnecessary consumption of energy caused by a project. Thereafter, the State Resources Agency created Appendix F of the CEQA Guidelines. As required by Appendix F of the CEQA Guidelines, the Sanitation Districts have considered construction waste reuse, use of native and non-invasive landscaping, and energy efficient equipment in temporary construction trailers and lighting for this project. The Sanitation Districts use commercially available equipment that conserves energy for the specific application in use at the time of construction.

20.4.1.2 Stormwater Infrastructure

Potential impacts on stormwater infrastructure are analyzed at the program and project level. The impacts on stormwater infrastructure are described using the existing impervious and pervious surfaces on site and the change to those surfaces that would occur during construction and operation of program and project elements.

20.4.1.3 Potable Water Supply

Potential impacts on potable water supply and demand are only analyzed at the project level. The impacts to potable water supplies are assessed using an upper limit of demand. The limit is based on Senate Bill 610 and the Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 (DWR 2003) for projects that require a water demand equivalent to 500 dwelling units per year[3]. This water demand is approximately 0.3 to 0.5 AFY per unit depending on the location in California, for a total of 150 to 250 AFY (DWR 2003). Typically water demand is greater in more arid regions of the state. Potable water demand for the project elements would only occur during construction. It is speculative to determine the exact quantity of water the TBM(s) would use during tunneling because there are no direct examples. Furthermore, there are many variables that could account for variation in water demand,

[3]SB610 is silent on water demand generated during construction. The water demand used by 500 single-family dwelling units is for the operation of those dwelling units (i.e., after construction has ended, and they are inhabited).

including the final excavated diameter of the tunnel, the type of soil or rock and its permeability, the pressures needed to exert force to tunnel, and differences in contractor operation of the TBM. However, it was determined that construction of project elements, particularly the use of the TBM(s) to construct the tunnel and the construction of the shaft sites, would not exceed 250 AFY (Jacobs 2010). This was determined assuming a slurry TBM would be used, which would require a larger quantity of water than an earth pressure balance TBM because of the need to use water to generate the slurry. Based on the estimated excavated face of the tunnel and several examples of previous projects using slurry TBMs, the use of one TBM is assumed to require a maximum amount of approximately 103 AFY and two TBMs would require a maximum amount of approximately 206 AFY (Jacobs 2010). In order to appropriately analyze the demand associated with each service provider, the total estimated water demand is allocated to the onshore and offshore tunnel alignments and the location of the shaft site. Then the allocated onshore and offshore demand is compared against the projected supply and demand of the service area. This data and methodology are used to analyze the project's potable water supply impacts.

20.4.1.4 Energy Demand

Electrical demand and supply is only analyzed as a potential impact at the project level. Electricity would be required to operate the TBM and would be provided at the shaft sites. Energy rates for a slurry TBM are used to estimate the energy demand and impacts because this type of TBM provides the most conservative estimate of electricity usage. The shaft sites would provide support for the construction of the tunnel alignments, including erection and launching the slurry TBMs, ongoing operation of the slurry TBMs for the length of the tunnel sections, and the removal of excavated materials. Working shaft sites would require significantly more electricity than access shaft sites because access shaft sites would simply provide ventilation and allow construction workers to enter and exit the tunnel, whereas working shaft sites would actually supply the electricity to the slurry TBM.

Analysis of the total power requirement for the project construction includes those power needs associated with TBM operation, auxiliary equipment (e.g., shaft pump, man hoist, and shaft crane), various shops and offices, and yard lighting. The JWPCP tunnel and ocean outfall feasibility report (Parsons 2011) estimates the project power requirements. Peak power requirements of maximum construction activities for 36,600 feet of onshore[4] tunnel construction are 21,775 kilovolt-amps (kVA), while peak power requirements for 55,000 feet of offshore tunnel construction are 27,635 kVA (Parsons 2011). The combined total power requirement over the 6- to 8-year construction period if the offshore and onshore tunnel alignments are constructed at the same time would be a maximum of approximately 49,000 kVA (Parsons 2011). Parsons determined the power requirements by including all equipment necessary for tunneling and shaft construction. Furthermore, the power requirements account for varying TBM utilization. The use of the TBM can vary between 30 and 50 percent during a 24-hour period, such that the TBM would be excavating and drawing full power for a period ranging from 8 to 12 hours. Within the excavation cycles, the TBM would excavate for 15 to 25 minutes, and then erect concrete lining for 10 to 15 minutes. The maximum power would, therefore, be required on a discontinued basis for periods of 15 to 25 minutes every 25 to 50 minutes. However, other equipment, such as lighting and ventilation fans, would be running constantly as long as there are workers in the tunnel and at the shaft site.

[4] In the JWPCP tunnel and ocean outfall feasibility report (Parsons 2011), the expected peak power requirements are based on the longest tunnel alignment portions from a working shaft site, which for the onshore portion is defined as beginning at the JWPCP and ending at the Royal Palms shaft site (Alternative 4), and for the offshore portion is defined as beginning at the LAXT shaft site and ending at the SP Shelf (Alternative 1).

In order to appropriately analyze the energy demand of the onshore and offshore tunnels, an energy demand factor was prepared using the estimated kVA and the lengths of the tunnels provided in the JWPCP tunnel and ocean outfall feasibility report. The demand factor for the onshore tunneling is assumed to be 0.6 kVA per foot, and the energy demand factor for the offshore tunneling is assumed to be 0.50 kVA per foot. These factors were then applied to the various lengths of the onshore and offshore tunnels to determine the estimated energy demand by alternative. The estimated energy demand for both the onshore and offshore tunnels is summarized in Table 20-14. This data is used to analyze the project's energy impacts.

Table 20-14. Energy Demand by Alternative

Alternative (Tunnel Alignment)	Onshore Length (feet)	Estimated Energy Demand for Onshore Tunnel (kVA)[a]	Offshore Length (feet)	Estimated Energy Demand for Offshore Tunnel (kVA)[b]
Alternative 1 (Wilmington to SP Shelf)	10,700	6,420	65,200	32,600
Alternative 2 (Wilmington to PV Shelf)	10,700	6,420	38,100	19,050
Alternative 3 (Figueroa/Gaffey to PV Shelf	34,000	20,400	11,400	5,700
Alternative 4 (Figueroa/Western to Royal Palms)	36,600	21,960[c]	N/A	N/A

[a] The estimated energy demand for the onshore tunnel was determined by applying a standard factor of 0.6 kVA/foot of energy demand. The factor was determined by dividing the estimated 21,775 kVA by the total length of 36,600 feet for the onshore tunnel cited in the feasibility report (Parsons 2011).

[b] The estimated energy demand for the offshore tunnel was determined by applying a standard factor of 0.50 kVA/foot of energy demand. The factor was determined by dividing the estimated 27,635 kVA by the total length of 55,000 feet of offshore tunnel cited in the feasibility report (Parsons 2011).

[c] Rounding associated with the calculation of the standard factor resulted in a slightly larger number than the 21,775 kVA identified by Parsons for 36,600 feet of onshore tunnel (see footnote "a" for details of the calculation).

KVA = kilovolt-amps

20.4.1.5 Baseline

CEQA Baseline

The CEQA baseline includes existing conditions for public services at all sites where program and project elements would be constructed, including the WRPs, shaft sites, tunnel alignments, and riser and diffuser areas. The reference date for the CEQA baseline is 2008 when the notice of preparation of this EIR/EIS was released for public review.

NEPA No-Federal-Action Baseline

The National Environmental Policy Act (NEPA) no-federal-action baseline for the Clearwater Program is described in Section 1.7.4.2. The NEPA baseline in general represents the condition and anticipated utilization of recreational resources at the year 2022 when construction of project elements under the United States (U.S.) Army Corps of Engineers' (Corps') jurisdiction would conclude.

Supply and demand for utilities and energy are projected to the year 2030 in the analysis below, encompassing the year 2022 when construction of project elements under the Corps' jurisdiction would conclude. Therefore, the NEPA no-federal-action baseline is the supply and demand projections through the year 2030.

Note that the NEPA analysis includes direct and indirect impacts as discussed in Section 3.5.2. Any impact associated with project elements located within the Corps' geographic jurisdiction (i.e., the marine environment) during construction would be the direct result of the Corps permit and considered a direct impact under NEPA. Any impact associated with project elements located outside the Corps' geographic jurisdiction during construction would be the indirect result of the Corps permit and considered an indirect impact under NEPA. Any impact that occurs during operation would be considered an indirect impact under NEPA.

20.4.2 Thresholds of Significance

The program and/or project would pose a significant impact if it exceeds any of the following thresholds for utilities, service systems, and energy (UTL):

UTL-1. Exceeds wastewater treatment requirements of the applicable regional water quality control board.

UTL-2. Requires or results in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

UTL-3. Requires or results in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

UTL-4. Requires new or expanded entitlements because sufficient water supplies would not be available to serve the project.

UTL-5. Results in the disruption or impediment of utility service to areas during construction.

UTL-6. Is served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs during construction and operation.

UTL-7. Is in noncompliance with federal, state, and local statutes and regulations related to solid waste.

UTL-8. Requires new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs.

Program and project elements were analyzed by threshold in the Preliminary Screening Analysis (Appendix 1-A) to identify potentially significant impacts on utilities, service systems, and energy before mitigation. Table 20-15 identifies which elements were brought forward for further analysis by threshold in this EIR/EIS for Alternatives 1 through 4. If applicable, Table 20-15 also identifies thresholds evaluated in this EIR/EIS if an emergency discharge into various water courses were to occur under the No-Project or No-Federal Action Alternatives, as described in Sections 3.4.1.5 and 3.4.1.6.

Table 20-15. Thresholds Evaluated

		Threshold							
	Alt.	**UTL-1**	**UTL-2**	**UTL-3**	**UTL-4**	**UTL-5**	**UTL-6**	**UTL-7**	**UTL-8**
Program Element									
Conveyance System	1–5			X					
SJCWRP Plant Expansion	1–5			X					
SJCWRP Process Optimization	1–4			X					
POWRP Process Optimization	1–4			X					
LCWRP Process Optimization	1–4			X					
LBWRP Process Optimization	1–4			X					
JWPCP Solids Processing	1–5			X					
Project Element									
Wilmington to SP Shelf (onshore tunnel) [a]	1,2				X		X		X
Wilmington to SP Shelf (offshore tunnel)	1				X		X		X
Wilmington to PV Shelf (onshore tunnel)[a]	1,2				X		X		X
Wilmington to PV Shelf (offshore tunnel)	2				X		X		X
Figueroa/Gaffey to PV Shelf (onshore tunnel)	3				X		X		X
Figueroa/Gaffey to PV Shelf (offshore tunnel)	3				X		X		X
Figueroa/Western to Royal Palms (onshore tunnel)	4				X		X		X
JWPCP East Shaft Site	1,2			X	X		X		X
TraPac Shaft Site	1,2			X	X		X		X
LAXT Shaft Site	1,2			X	X		X		X
Southwest Marine Shaft Site	1,2			X	X		X		X
JWPCP West Shaft Site	3,4			X	X		X		X
Angels Gate Shaft Site	3			X	X		X		X
Royal Palms Shaft Site	4			X	X		X		X
SP Shelf Riser/Diffuser Area	1						X		
PV Shelf Riser/Diffuser Area	2						X		
Emergency Discharge	5,6	X							

[a] The onshore tunnel alignment for the Wilmington to SP Shelf is the same as the onshore tunnel alignment for the Wilmington to PV Shelf.
Alt. = alternative

In the Alternatives analysis that follows, if a program or project element is common to more than one alternative, a detailed discussion is presented only in the first Alternative in which it appears.

20.4.3 Alternative 1

20.4.3.1 Program

Impact UTL-3. Would Alternative 1 (Program) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Conveyance System – Conveyance Improvements

Construction

The Clearwater Program has identified the need for conveyance improvements. Implementation of the program-level conveyance improvements could result in impacts on stormwater drainage by potentially (1) increasing stormwater runoff generated during construction due to uncovered trenches and soil, (2) changing the location of stormwater discharge, or (3) increasing the velocity of the stormwater runoff generated. At this time, however, no specific projects have been proposed. Even so, the Sanitation Districts incorporate many standard practices and requirements into each publicly bid construction contract to minimize any impacts, including preparation of a SWPPP (see Section 20.3.2.3). These standard practices and bid requirements are used on all conveyance system construction projects, whether installing new sewers or rehabilitating existing sewers. Impacts would be less than significant.

San Jose Creek Water Reclamation Plant – Plant Expansion and Process Optimization

Construction

During the expansion of the SJCWRP and construction of process optimization, soil would be exposed and the onsite drainage pattern would be altered for a period of 2 to 3 years. Construction could change both the volume and velocity of runoff generated during storm events. It could also change the discharge locations of stormwater runoff on and off site based on alterations to the drainage pattern. The Sanitation Districts would adhere to the requirements of the SWRCB's Construction General Permit, and the grading and erosion control measures of Appendix J of the Los Angeles County Municipal Code as described under Section 20.3.2.4, as required. Compliance with the Construction General Permit (NPDES) would require a site-specific SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts would be less than significant.

Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant, and Long Beach Water Reclamation Plant – Process Optimization

Construction

Impacts associated with construction of process optimization at the POWRP, LCWRP, and LBWRP would be the same as those for plant expansion and process optimization at the SJCWRP. Compliance with the Construction General Permit (NPDES) would require a site-specific SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Additionally, the Sanitation Districts would adhere to the stormwater management control measures of Section 18 of the City of Pomona Municipal Code (see Section 20.3.2.5) for the POWRP, and the stormwater and urban runoff prevention and control measures of Chapter 6.32 of the City of Cerritos Municipal Code (see

Section 20.3.2.6) for the LCWRP and Chapter 18.95 of the City of Long Beach Municipal Code (see Section 20.3.2.7) for the LBWRP, as required. Therefore, impacts would be less than significant.

Joint Water Pollution Control Plant – Solids Processing

Construction

Impacts associated with construction of the solids processing facilities at the JWPCP would be the same as those for plant expansion and process optimization at the SJCWRP. Compliance with the Construction General Permit (NPDES) would require a site-specific SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts would be less than significant. Additionally, the Sanitation Districts would adhere to the development construction control measures of Chapter 8 of the City of Carson Municipal Code as described under Section 20.3.2.8, as required. Therefore, impacts would be less than significant.

CEQA Impact Determination

Construction of Alternative 1 (Program) would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects before mitigation. Impacts would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

The Sanitation Districts would comply with all applicable city and county municipal codes regarding stormwater control for construction of the plant expansion and process optimization at SJCWRP; process optimization at the POWRP, LCWRP, and LBWRP; and the solids processing facilities at the JWPCP. Compliance with the Construction General Permit (NPDES) would require a site-specific SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. The SWPPP would identify applicable water quality BMPs to effectively control construction-related pollutants and stormwater generation, including alteration of the drainage patterns and changes in volume and velocity of flow. Therefore, with the preparation of a SWPPP, construction of new stormwater drainage facilities or expansion of existing facilities would not be required, and impacts would be less than significant.

20.4.3.2 Project

Impact UTL-3. Would Alternative 1 (Project) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

During shaft and tunnel construction, soil at the shaft sites would be exposed and the onsite drainage pattern would be altered for a period of 8 years. Construction could change both the volume and velocity of runoff generated during storm events. It could also change the discharge locations of stormwater

runoff on and off site based on alterations to the drainage pattern. For the JWPCP East shaft site, the Sanitation Districts would adhere to the development construction control measures of Chapter 8 of the City of Carson Municipal Code as described under Section 20.3.2.8, as required. For the Trans Pacific Container Service Corporation (TraPac), LAXT, and Southwest Marine shaft sites, the Sanitation Districts would adhere to the Department of Building and Safety Measures of Chapter IX of the City of Los Angeles Municipal Code as described under Section 20.3.2.9, as required. Compliance with the Construction General Permit (NPDES) would require a site-specific SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

The Sanitation Districts would comply with all applicable city and county municipal codes regarding stormwater control for construction at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites. Compliance with the Construction General Permit (NPDES) would require a site-specific SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. The SWPPP would identify applicable water quality BMPs to effectively control construction-related pollutants and stormwater generation, including alteration of the drainage patterns and changes in volume and velocity of flow. Therefore, with the preparation of a SWPPP at the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites, construction of new stormwater drainage facilities or expansion of existing facilities would not be required, and impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Residual impacts would be less than significant, as described under the CEQA impact determination.

Impact UTL-4. Would Alternative 1 (Project) require new or expanded entitlements because sufficient water supplies would not be available to serve the project?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore and Offshore), and Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

The volume of potable water required for the construction of project elements would be greater than the existing demand for water at these sites; however, the estimated water demand for construction is well within the estimated future projected supply for water provided by the LADWP and CalWater. It is estimated that construction of the Wilmington to SP Shelf onshore and offshore tunnel alignment as well as the construction of the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites would require approximately 206 AFY of water, the majority of which would be used at the construction shaft sites. CalWater would provide approximately 69 AFY of potable water for constructing the JWPCP East shaft site and the onshore tunnel from the JWPCP East shaft site to the TraPac shaft site.[5] The LADWP would provide approximately 137 AFY of potable water for constructing the TraPac, LAXT, and Southwest Marine shaft sites and the offshore tunnel from TraPac to the SP Shelf.[6] The service providers' projected future supply and demand are described in Table 20-16.

Table 20-16. Alternative 1 (Project) Service Providers' Future Water Supply and Demand (Acre-Feet per Year)

	Year	Service Provider Supply	Service Provider Demand[a]	Difference
CalWater	2025	47,132	39,894	7,238
LADWP	2030	934,200	776,137	158,063

[a] Includes the estimated allocated demand of 69 AFY and 137 AFY between CalWater and LADWP, respectively.

CalWater's contribution of 69 AFY for construction of Alternative 1 (Project) would be approximately 0.2 percent of the projected future supply of CalWater for 2025. There is still a projected excess supply with this additional project demand. Furthermore, LADWP's contribution of 137 AFY for construction of Alternative 1 (Project) would be approximately 0.02 percent of the projected future supply of LADWP for 2030. There is still a projected excess supply with this additional project demand. Therefore, both LADWP and CalWater are projected to have sufficient projected supplies to support the demand associated with construction. Not only would the projected water supply exceed the estimated demand for potable water during construction, the demand on the potable water supply would be temporary and would be limited to the duration of construction. Impacts would be less than significant.

[5] The allocation of estimated potable water demand for CalWater was calculated by generally assuming one-third of the total tunnel alignment occurs in CalWater's service area (from JWPCP East to TraPac). Therefore, CalWater would be responsible for providing approximately one-third of the estimated 206 AFY, or approximately 69 AFY.
[6] The allocation of estimated potable water demand for the LADWP was calculated by generally assuming two-thirds of the total tunnel alignment occurs in LADWP's service area (from TraPac to the SP Shelf). Therefore, LADWP would be responsible for providing approximately two-thirds of the estimated 206 AFY, or approximately 137 AFY.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts for the onshore tunnel and the shaft sites. Impacts would be considered direct for the offshore tunnel.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not require new or expanded entitlements because sufficient water supplies would be available to serve the project. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not require new or expanded entitlements because sufficient water supplies would be available to serve the project. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact UTL-6. Would Alternative 1 (Project) be served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs during construction and operation?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore and Offshore); Shaft Sites – JWPCP East, TraPac, LAXT, and Southwest Marine; Riser/Diffuser Area – San Pedro Shelf

Construction

CEQA Analysis

The disposal of the excavated material would occur at several different locations depending on the type of material and its origin. The specific disposal facilities are currently unknown as it is required by the Sanitation Districts' standard practices and procedures that the construction contractors' handle and dispose of all hazardous and non-hazardous materials during construction. For this analysis, it was assumed that non-hazardous onshore excavated material from onshore tunnel and shaft site construction would be disposed of at the Mesquite Landfill. It was assumed that non-hazardous offshore material that is unsuitable for ocean disposal would also be disposed of at the Mesquite Landfill, and that suitable non-hazardous offshore material would be disposed of at an Ocean Dredge Material Disposal Site

(ODMDS), such as LA-2 or LA-3.[7] It was also assumed that hazardous excavated material would be taken to a certified hazardous material waste disposal facility in California. The details of these disposal options as they relate to the amount of excavated material generated are discussed herein.

As described in Chapter 18, there would be approximately 65 outbound truck trips per day associated with the removal of excavated material during shaft site construction and 95 outbound truck trips per day associated with the removal of excavated material during onshore tunneling.[8] One truck typically holds 20 cubic yards of excavated material. Therefore, between 1,300 cubic yards (936 tons[9]) and 1,900 cubic yards (1,368 tons) of excavated material generated from onshore activities would require disposal per day. Some of this material from the shaft sites would likely be deemed hazardous. Specifically, some soil excavated from the JWPCP East, TraPac, and Southwest Marine shaft sites may be contaminated based on previous land uses and the proximity to existing hazardous site locations as described in Chapter 10. Although the exact percentage or quantity of excavated material that would be deemed hazardous is unknown, as it would be required to be tested and handled at the shaft site during construction (described in Chapter 10), it is reasonably assumed that approximately 10 percent of the excavated material would be deemed hazardous.

It is assumed that the non-hazardous excavated material from the shaft sites and onshore tunnel would be taken to the Mesquite Landfill. This landfill is managed by the Sanitation Districts and is located in Imperial County off Highway 78 and 5 miles northeast of the city of Glamis. The Mesquite Landfill can receive a maximum amount of 20,000 tons per day, and has a current available capacity of 600 million tons with a projected closing date of 2097 (Sanitation Districts 2007). This landfill is a Class III landfill and receives non-hazardous municipal and commercial wastes. The excavated material would be taken via truck to the intermodal station to be transferred to rail and delivered to the Mesquite Landfill. If all the excavated material from the shaft site and onshore tunnel were disposed of at the Mesquite Landfill, 936 tons to 1,368 tons would be disposed of daily. Therefore, the construction of Alternative 1 would not generate more than 20,000 tons per day and the Mesquite Landfill would be able to handle the disposal of excavated material. Impacts would be less than significant.

The suitable non-hazardous offshore material (i.e., marine sediment) generated by construction of the offshore tunnel under Alternative 1 could be barged for disposal to an ODMDS as described in Chapters 3, 18, and 19. As shown in Table 3-11 in Chapter 3, an estimate of between 5,000,000 and 30,000,000 cubic yards of offshore material would be generated during the tunneling of the entire offshore tunnel, which is equivalent to a minimum of 2,460 cubic yards of offshore excavated material per day.[10] In addition, an estimate of 50,000 to 95,000 cubic yards of dredged material could be generated by construction of the riser, depending on the type of construction and design of the diffuser. The capacity of LA-3 and impacts associated with ocean disposal of marine sediment was analyzed in the Draft Environmental Impact Statement for the Proposed Site Designation of the LA-3 Ocean Dredged

[7] Suitability typically depends on particle size, source of material, and other characteristics of the excavated material.
[8] Table 18-12 identifies an estimated 65 truck round trips per day (130 total one-way) during shaft construction and up to 95 truck round trips per day (190 total one-way) for excavated material disposal. Although the 130 total one-way trips during shaft construction may not all be used for excavated material disposal, this number was used to provide a conservative estimate of the amount of excavated material that would be disposed.
[9] Conversion assumes 1 cubic yard of excavated material is approximately 0.72 ton.
[10] 2,460 cubic yards of offshore excavated material was calculated by taking the number of one-way offshore tunneling truck trips per day assumed in Table 18-12, Footnote i, in Chapter 18, and multiplying it by 20 cubic yards (the amount of excavated material one truck can contain). This footnote identifies approximately 123 outbound trips would be required during offshore tunneling to dispose of excavated material.

Material Disposal Site off Newport Bay, Orange County, California, prepared for the EPA and the Corps, Los Angeles District (U.S. EPA and the Corps 2004). Furthermore, the EPA and Corps oversee the permit, monitoring, and management of marine sediment disposal at this location, and the capacity of the disposal area is controlled by granting permits (EPA and Corps 2004). While LA-2 is almost at capacity, LA-3 can still accept material. The Sanitation Districts would apply for a permit to dispose of the offshore excavated material. If the material is deemed suitable and the permit is granted, LA-3 would more likely receive the offshore excavated material. Therefore, impacts would be less than significant. Any material deemed not-suitable for ocean disposal would be taken to an inland facility, such as the Mesquite Landfill. Even if the Mesquite Landfill were to accept the entire volume of offshore material, it would not exceed its permitted capacity per day. Therefore, impacts would be less than significant.

Excavated material generated by shaft site and onshore tunneling construction that is deemed hazardous would be taken to a certified hazardous material waste disposal facility (also permitted as Recycling, Treatment, Transfer, Storage, and Disposal Facilities by the state of California). This facility could be a landfill facility such as the Clean Harbors Landfill in Buttonwillow or Westmorland, or the Chemical Waste Management Landfill in Kettleman City (DTSC 2011). The hazardous waste generated by the proposed project would not exceed the capacity of the three landfills. It could also go to a facility to be incinerated depending on the contamination in the excavated material. These facilities work with construction contractors to dispose of hazardous materials for a fee. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts for the onshore tunnel and the shaft sites. Impacts would be considered direct for the offshore tunnel and riser and diffuser on the SP Shelf.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not be served by landfills with insufficient permitted capacity to accommodate the solid waste disposal. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not be served by landfills with insufficient permitted capacity to accommodate the solid waste disposal. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact UTL-8. Would Alternative 1 (Project) require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs?

Tunnel Alignment – Wilmington to San Pedro Shelf (Onshore)

Construction

CEQA Analysis

It is assumed that SCE would provide power for the construction of the Wilmington to SP Shelf onshore tunnel at the JWPCP East shaft site if one TBM were traveling south from the JWPCP East shaft site to the TraPac shaft site. Furthermore, it is assumed that the LADWP would provide energy at the LAXT shaft site to provide power to the onshore tunnel if one TBM were traveling north from the LAXT shaft site to the JWPCP East shaft site. Finally, it is assumed that the excess power generated by the JWPCP as described in Section 20.2.2 would not be used during construction of the tunnel or shaft sites. Therefore, two providers are included in the analysis.

The amount of energy required for the construction of the onshore tunnel would be greater than the existing demand for energy along this alignment; however, the estimated energy demand for construction is well within the estimated future projected supply for energy provided by SCE. The maximum peak power demand is estimated to be approximately 6,420 kVA (see Table 20-14). SCE currently provides power supply and demand estimates for 2020 and 2030. The onshore construction period for Alternative 1 (Project) would occur at some year prior to 2020. SCE estimates a demand of approximately 35,590,000 kVA during an average year and 37,790,000 kVA during an adverse year in 2020, as shown in Table 20-7. The estimated onshore tunnel demand would be an addition of less than 0.02 percent of the estimated power demand for SCE throughout construction. SCE estimates there would be an excess of projected supply (approximately 39,835,000 kVA and 38,895,000 kVA during average and adverse years, respectively) when compared to demand in 2020.

The LADWP would provide energy if the TBM were located at LAXT and traveled north. The amount of energy required for the construction of the onshore tunnel would be greater than the existing demand for energy along this alignment; however, the estimated energy demand for construction is well within the estimated future projected supply for energy provided by the LADWP. The LADWP estimates a demand of approximately 6,876,000 kVA in 2020, as shown in Table 20-13. The estimated onshore tunnel demand of 6,741 kVA would be an addition of less than 0.1 percent of the estimated power demand for the LADWP during construction. The LADWP estimates it would have an excess of projected supply (approximately 7,721,000 kVA) when compared to demand in 2020.

The energy demand from the onshore tunnel alignment would be negligible compared to the projected demand for SCE and the LADWP service area, and there would be sufficient supply to meet the demand. Furthermore, the Sanitation Districts have already met with SCE and LADWP about providing power during construction, and it was confirmed that there is sufficient power in the electrical grid where the shaft sites are located to support the tunneling operations without having to construct additional power generation facilities (Parsons 2011). Additionally, the demand on the energy supply would be temporary and would be limited to the duration of construction. Therefore, Alternative 1 (Project) power demand would be provided by power purchases made from SCE or the LADWP and would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alteration to existing facilities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Wilmington to San Pedro Shelf (Offshore)

Construction

CEQA Analysis

It is assumed that the LADWP would provide power for the Wilmington to SP Shelf offshore tunnel at the LAXT shaft site for two TBMs. Therefore, only one provider is discussed for the offshore tunnel construction.

The amount of energy required for the construction of the offshore tunnel would be greater than the existing demand for energy along this alignment; however, the estimated energy demand for construction is well within the estimated future projected supply for energy provided by the LADWP. The LADWP currently provides power supply and demand estimates for 2020 and 2027. The construction period for the offshore alignment would extend through 2021. Although the construction period would exceed the projected demand estimate by a year, the 2020 projection year is used to provide the most reasonable analysis of the demand and supply expected within that timeframe. The LADWP estimates a demand of approximately 6,876,000 kVA in 2020, as shown in Table 20-13. The construction power demand is estimated at 32,600 kVA for the offshore tunnel alignment (see Table 20-14). Therefore, the demand of the offshore tunnel alignment would result in an addition of less than 0.5 percent of the projected energy demand for the LADWP in 2020. The LADWP estimates that it would have an excess of projected supply (approximately 7,721,000 kVA in 2020) when compared to demand.

The power demand created by the construction of the offshore tunnel alignment would be negligible compared to the projected power supply and demand for the LADWP throughout the construction period. Additionally, the demand on the energy supply would be temporary and would be limited to the duration of construction. Therefore, power demand would be provided by power purchases made from the LADWP and would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alteration to existing facilities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Site – JWPCP East

Construction

CEQA Analysis

The power supply estimates include the equipment necessary for the JWPCP East shaft site construction and the maintenance of the shaft site during tunnel construction. As such, it is appropriate to assume the amount of power demand at the JWPCP East shaft site would be within the estimates provided for the onshore tunnel alignment located between the JWPCP East shaft site and the TraPac shaft site. The

energy demand from construction at the JWPCP East shaft site would be negligible compared to the projected demand for SCE throughout the construction period, and there would be sufficient supply to meet the demand (see Table 20-7, Table 20-13, and Table 20-14). The shaft would be constructed primarily with standard diesel-powered equipment that would not draw from the local utility provider. Additionally, the demand on the energy supply would be temporary and would be limited to the duration of construction. Therefore, power demand would be provided by power purchases made from SCE and would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alteration to existing facilities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – TraPac, LAXT, and Southwest Marine

Construction

CEQA Analysis

The power supply estimates include the equipment necessary for the LAXT shaft site construction and the maintenance of the shaft site during tunnel construction. As such, it is appropriate to assume the amount of power demand at the TraPac, LAXT, and Southwest Marine shaft sites would be within the estimates provided for the offshore tunnel alignment located between the TraPac shaft site and the LAXT shaft site as well as between the LAXT shaft site and the SP Shelf. The energy demand from construction at the TraPac, LAXT, and Southwest Marine shaft sites would be negligible compared to the projected demand for the LADWP service area, and there would be sufficient supply to meet the demand (see Table 20-7, Table 20-13, and Table 20-14). The shafts would be constructed primarily with standard diesel-powered equipment that would not draw from the local utility provider. Additionally, the demand on the energy supply would be temporary and would be limited to the duration of construction. Therefore, power demand would be provided by power purchases made from the LADWP and would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alteration to existing facilities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 1 (Project) would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 1 (Project) would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

20.4.3.3 Impact Summary – Alternative 1

Impacts on utilities, service systems, and energy analyzed in this EIR/EIS for Alternative 1 are summarized in Table 20-17 and Table 20-18. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the tables.

Table 20-17. Impact Summary – Alternative 1 (Program)

Program Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact UTL-3. Would Alternative 1 (Program) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			
Conveyance System			
Conveyance Improvements	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
SJCWRP			
Plant Expansion	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
POWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LCWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
LBWRP			
Process Optimization	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction
JWPCP			
Solids Processing	CEQA Less Than Significant Impact During Construction	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 20-18. Impact Summary – Alternative 1 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact UTL-3. Would Alternative 1 (Project) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-4. Would Alternative 1 (Project) require new or expanded entitlements because sufficient water supplies would not be available to serve the project?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 20-18 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-6. Would Alternative 1 (Project) be served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs during construction and operation?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 20-18 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
SP Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-8. Would Alternative 1 (Project) require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs?				
Tunnel Alignment				
Wilmington to SP Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 20-18 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Wilmington to SP Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

20.4.4 Alternative 2

20.4.4.1 Program

Alternative 2 (Program) is the same as Alternative 1 (Program).

20.4.4.2 Project

The impacts for the onshore tunnel and the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites for Alternative 2 (Project) would be the same as for Alternative 1 (Project).

Impact UTL-4. Would Alternative 2 (Project) require new or expanded entitlements because sufficient water supplies would not be available to serve the project?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

The volume of potable water required for the construction of project elements would be greater than the existing demand for water at these sites; however, the estimated water demand for construction is well within the estimated future projected supply for water provided by the LADWP and CalWater. Water demand for the Wilmington to PV Shelf offshore tunnel alignment would generally be less than the demand considered under Alternative 1 (Project) because the offshore tunnel length for Alternative 2 (Project) would be approximately 38,100 feet, which is 27,100 feet less than the offshore tunnel length for Alternative 1 (Project). Not only would the projected water supply meet the estimated demand for potable water during construction, the demand on the potable water supply would be temporary and would be limited to the duration of construction. As such, impacts would be less than those estimated under Alternative 1 (Project); therefore, impacts for the Wilmington to PV Shelf offshore tunnel alignment would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 2 (Project) would not require new or expanded entitlements because sufficient water supplies would be available to serve the project. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 2 (Project) would not require new or expanded entitlements because sufficient water supplies would not be available to serve the project. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact UTL-6. Would Alternative 2 (Project) be served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs during construction and operation?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore), and Riser/Diffuser Area – Palos Verdes Shelf

Construction

CEQA Analysis
The offshore excavated material generated by construction of the offshore tunnel would be barged for disposal at an ODMDS, as described in Alternative 1. Because the overall volume of excavated material would be less under Alternative 2, impacts would be less than those described under Alternative 1. Impacts would be less than significant.

NEPA Analysis
Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination
Construction of Alternative 2 (Project) would not be served by landfills with insufficient permitted capacity to accommodate the solid waste disposal. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 2 (Project) would not be served by landfills with insufficient permitted capacity to accommodate the solid waste disposal. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact UTL-8. Would Alternative 2 (Project) require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs?

Tunnel Alignment – Wilmington to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

It is assumed that the LADWP would provide power for the Wilmington to PV Shelf offshore tunnel at the LAXT shaft site if one TBM were traveling south from LAXT to the PV Shelf. Therefore, only one provider would be responsible for providing the energy demand associated with the offshore tunnel construction.

The amount of energy required for the construction of the offshore tunnel would be greater than the existing demand for energy along this alignment; however, the estimated energy demand for construction is well within the estimated future projected supply for energy provided by the LADWP. The power construction demand is an estimated 19,050 kVA for the offshore tunnel alignment, and construction would be completed in 2020 (see Table 20-14). The LADWP estimates a power demand of approximately 6,876,000 kVA in 2020, as shown in Table 20-13. Therefore, the demand of the offshore tunnel alignment would result in an addition of less than 0.3 percent of the projected energy demand for the LADWP in 2020. The LADWP estimates that it would have an excess of projected supply when compared to projected demand (approximately 7,721,000 in 2020). This excess supply would be able to provide power throughout its service area. The power demand created by the construction of the offshore tunnel alignment would be negligible compared to the power supply and demand for the LADWP service area during the construction period. Furthermore, the demand on the energy supply would be temporary and would be limited to the duration of construction. Therefore, project power demand would be provided by power purchases made from the LADWP and would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alteration to existing facilities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described above for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

CEQA Impact Determination

Construction of Alternative 2 (Project) would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 2 (Project) would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

20.4.4.3 Impact Summary – Alternative 2

Impacts on utilities, service systems, and energy for Alternative 2 (Program), which are the same as Alternative 1 (Program), are summarized in Table 20-17. Impacts analyzed in this EIR/EIS for Alternative 2 (Project) are summarized in Table 20-19. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 20-19. Impact Summary – Alternative 2 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact UTL-3. Would Alternative 2 (Project) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 20-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-4. Would Alternative 2 (Project) require new or expanded entitlements because sufficient water supplies would not be available to serve the project?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 20-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-6. Would Alternative 2 (Project) be served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs during construction and operation?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 20-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-8. Would Alternative 2 (Project) require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs?				
Tunnel Alignment				
Wilmington to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Wilmington to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP East	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
TraPac	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 20-19 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
LAXT	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Southwest Marine	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

20.4.5 Alternative 3

20.4.5.1 Program

Alternative 3 (Program) is the same as Alternative 1 (Program).

20.4.5.2 Project

The impacts for the riser and diffuser area on the PV Shelf for Alternative 3 (Project) would be the same as those described for Alternative 2 (Project).

Impact UTL-3. Would Alternative 3 (Project) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

During shaft and tunnel construction, soil at the shaft sites would be exposed, and the onsite drainage pattern would be altered for a period of 2 to 3 years. Construction could change both the volume and velocity of runoff generated during storm events. It could also change the discharge locations of stormwater runoff on and off site based on alterations to the drainage pattern. The Sanitation Districts would adhere to the development construction control measures of Chapter 8 of the City of Carson Municipal Code and Chapter IX of the City of Los Angeles Municipal Code as described under Sections 20.3.3.8 and 20.3.3.9, as required. Compliance with the Construction General Permit (NPDES) would require a site-specific SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

The Sanitation Districts would comply with all applicable city and county municipal codes regarding stormwater control for construction at the JWPCP West and Angels Gate shaft sites. Compliance with the Construction General Permit (NPDES) would require a site-specific SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. The SWPPP would identify applicable water quality BMPs to effectively control construction-related pollutants and stormwater generation, including alteration of the drainage patterns and changes in volume and velocity of flow. Therefore, with the preparation of a SWPPP for construction at the JWPCP West and Angels Gate shaft sites, construction of new stormwater drainage facilities or expansion of existing facilities would not be required, and impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant, as described under the CEQA impact determination.

Impact UTL-4. Would Alternative 3 (Project) require new or expanded entitlements because sufficient water supplies would not be available to serve the project?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore and Offshore), and Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

The volume of potable water required for the construction of project elements would be greater than the existing demand for water at these sites; however, the estimated water demand for construction is well within the estimated future projected supply for water provided by the LADWP. It is estimated the total

construction of the Figueroa/Gaffey to PV Shelf onshore and offshore tunnel as well as the construction of the JWPCP West and Angels Gate shaft sites would require less than 103 AFY of water. The LADWP would provide approximately 103 AFY of potable water for constructing the JWPCP West and Angels Gate shaft sites and the onshore and offshore tunnel. The service provider's projected future supply and demand are described in Table 20-20.

Table 20-20. Alternative 3 (Project) Service Provider's Future Water Supply and Demand (Acre-Feet per Year)

	Year	Service Provider Supply	Service Provider Demand[a]	Difference
LADWP	2030	934,200	776,103	158,097

[a] Includes the estimated allocated demand of 103 AFY.

The LADWP's contribution of 103 AFY would be approximately 0.01 percent of the projected future supply of the LADWP for 2030. There is still a projected excess supply with the additional project demand; therefore, the LADWP is projected to have sufficient future water supplies to support the construction of Alternative 3 (Project). Not only would the projected water supply exceed the estimated demand for potable water during construction, the demand on the potable water supply would be temporary and would be limited to the duration of construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts for the onshore tunnel and the shaft sites. Impacts would be considered direct for the offshore tunnel.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not require new or expanded entitlements because sufficient water supplies would be available to serve the project. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not require new or expanded entitlements because sufficient water supplies would be available to serve the project. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact UTL-6. Would Alternative 3 (Project) be served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs during construction and operation?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore and Offshore), and Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

The project elements would generate excavated material as discussed under Alternative 1. The shaft site construction and onshore tunneling excavated material would be handled the same way as described in Alternative 1 and the daily volumes would be similar to those described in Alternative 1. However, in Alternative 3, the excavated material from the offshore tunneling would be sent back to the JWPCP West shaft site and disposed of at an inland disposal facility. It would not be barged to an ODMDS. Similar volumes of maximum excavated material per day would go to an inland disposal facility under this Alternative when compared to Alternative 1. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts for the onshore tunnel and the shaft sites. Impacts would be considered direct for the offshore tunnel.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not be served by landfills with insufficient permitted capacity to accommodate the solid waste disposal. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not be served by landfills with insufficient permitted capacity to accommodate the solid waste disposal. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact UTL-8. Would Alternative 3 (Project) require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs?

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Onshore)

Construction

CEQA Analysis

It is assumed that the LADWP would provide power for the Figueroa/Gaffey to PV Shelf onshore tunnel at the JWPCP West shaft site for the TBM traveling south from the JWPCP West shaft site to the Angels Gate shaft site. Therefore, only one provider would be responsible for providing the energy demand associated with the onshore tunnel construction.

The amount of energy required for the construction of the onshore tunnel would be greater than the existing demand for energy along this alignment; however, the estimated energy demand for construction is well within the estimated future projected supply for energy provided by the LADWP. The length of onshore tunneling for Alternative 3 (Project) would be longer than that which is planned for Alternative 1 (Project), and would result in a more prolonged energy demand. Construction would be completed prior to 2020. Power for the onshore portion of the alignment would originate at the JWPCP West shaft site. The estimated energy demand for the construction of the onshore tunnel alignment is approximately 20,400 kVA (see Table 20-14). The LADWP estimates a demand of approximately 6,876,000 kVA in 2020, as shown in Table 20-13. The estimated onshore tunnel demand would result in an addition of approximately 0.3 percent of the estimated power demand for the LADWP throughout construction. The LADWP estimates it would have an excess of projected supply (approximately 7,721,000 kVA) when compared to demand in 2020.

The energy demand from construction of the onshore tunnel would be negligible compared to the projected demand in the LADWP service area, and there would be sufficient supply to the meet the demand. Additionally, the demand on the energy supply would be temporary and would be limited to the duration of construction. Therefore, Alternative 3 (Project) power demand would be provided by power purchases made from the LADWP and would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alteration to existing facilities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Tunnel Alignment – Figueroa/Gaffey to Palos Verdes Shelf (Offshore)

Construction

CEQA Analysis

It is assumed that the LADWP would provide power for the Figueroa/Gaffey to PV Shelf offshore tunnel at the JWPCP West shaft site for the TBM traveling south from the Angels Gate shaft site to the

PV Shelf. Therefore, only one provider would be responsible for providing the energy demand associated with the offshore tunnel construction.

The amount of energy required for the construction of the offshore tunnel would be greater than the existing demand for energy along this alignment; however, the estimated energy demand for construction is well within the estimated future projected supply for energy provided by the LADWP. Power supply impacts for the offshore tunnel alignment would be less than those considered under Alternative 1 (Project) because the length of this offshore alignment and the construction time would be less than that which is estimated for Alternative 1 (Project). The estimated power requirement for the offshore tunnel alignment is 5,700 kVA (see Table 20-14), and construction would be completed in 2020. The LADWP estimates a demand of approximately 6,876,000 kVA in 2020, as shown in Table 20-13. Therefore, the demand for the offshore tunnel alignment would result in an addition of approximately 0.08 percent of the energy demand for the LADWP in 2020. The LADWP estimates that it would have an excess of projected supply (approximately 7,721,000 kVA in 2020) when compared to demand. As such, the power demand created by the construction of the offshore tunnel alignment would be negligible compared to the projected power supply for the LADWP service area. Therefore, power demand would be provided by power purchase made from the LADWP and would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alternations to existing facilities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered direct impacts.

Shaft Sites – JWPCP West and Angels Gate

Construction

CEQA Analysis

The energy provider for the JWPCP West and Angels Gate shaft sites would be the LADWP. The power supply estimates include the equipment necessary for the JWPCP West and the Angels Gate shaft site construction and the maintenance of the shaft site during tunnel construction. As such, it is appropriate to assume the amount of power demand at the JWPCP West and Angels Gate shaft sites would be within the estimates provided for the onshore tunnel alignment located between the JWPCP West shaft site and the Angels Gate shaft site. The energy demand from construction at the JWPCP West and Angels Gate shaft sites would be negligible compared to the projected demand for the LADWP throughout the construction period, and there would be sufficient supply to meet the demand (see Table 20-7, Table 20-13, and Table 20-14). The shafts would be constructed primarily with standard diesel-powered equipment that would not draw from the local utility provider. Additionally, the demand on the energy supply would be temporary and would be limited to the duration of construction. Therefore, power demand would be provided by power purchases made from the LADWP and would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alteration to existing facilities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With

respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 3 (Project) would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 3 (Project) would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

20.4.5.3 Impact Summary – Alternative 3

Impacts on utilities, service systems, and energy for Alternative 3 (Program), which are the same as Alternative 1 (Program), are summarized in Table 20-17. Impacts analyzed in this EIR/EIS for Alternative 3 (Project) are summarized in Table 20-21. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 20-21. Impact Summary – Alternative 3 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact UTL-3. Would Alternative 3 (Project) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 20-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-4. Would Alternative 3 (Project) require new or expanded entitlements because sufficient water supplies would not be available to serve the project?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-6. Would Alternative 3 (Project) be served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs during construction and operation?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 20-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Riser/Diffuser Area				
PV Shelf	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-8. Would Alternative 3 (Project) require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs?				
Tunnel Alignment				
Figueroa/ Gaffey to PV Shelf (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Figueroa/ Gaffey to PV Shelf (Offshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Direct	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 20-21 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Angels Gate	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

20.4.6 Alternative 4 (Recommended Alternative)

20.4.6.1 Program

Alternative 4 (Program) is the same as Alternative 1 (Program).

20.4.6.2 Project

The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project), except tunnel construction would occur over a period of 4 years instead of 5 years.

Impact UTL-3. Would Alternative 4 (Project) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Shaft Site – Royal Palms

Construction

CEQA Analysis

During shaft and tunnel construction, and tunnel connection to the existing ocean outfall manifold, soil at the shaft site would be exposed and the onsite drainage pattern would be altered for a period of 2 to 3 years. Construction could change both the volume and velocity of runoff generated during storm events. It could also change the discharge locations of stormwater runoff on and off site based on alterations to the drainage pattern. The Sanitation Districts would adhere to Chapter IX of the City of Los Angeles Municipal Code as described under Section 20.3.2.9 as required. Compliance with the Construction General Permit (NPDES) would require a site-specific SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

The Sanitation Districts would comply with all applicable city and county municipal codes regarding stormwater control for construction at the JWPCP West and Royal Palms shaft sites. Compliance with the Construction General Permit (NPDES) would require a site-specific SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. The SWPPP would identify applicable water quality BMPs to effectively control construction-related pollutants and stormwater generation, including alteration of the drainage patterns and changes in volume and velocity of flow. Therefore, with the preparation of a SWPPP for construction at the JWPCP West and Royal Palms shaft sites, construction of new stormwater drainage facilities or expansion of existing facilities would not be required, and impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant, as described under the CEQA impact determination.

Impact UTL-4. Would Alternative 4 (Project) require new or expanded entitlements because sufficient water supplies would be available to serve the project?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore), and Shaft Site – Royal Palms

Construction

CEQA Analysis

The volume of potable water required for the construction of project elements would be greater than the existing demand for water at these sites; however, the estimated water demand for construction is well within the estimated future projected supply for water provided by the LADWP. It is estimated the construction of the onshore tunnel and Royal Palms shaft sites would require less than 103AFY of water. The LADWP would provide the potable water demand as discussed in Alternative 3 (Project). The service provider's projected supply and demand are described in Table 20-20.

The LADWP's contribution of 103AFY of water would be approximately 0.01 percent of the projected future supply of the LADWP for 2030. There is still a projected excess supply with the additional project demand; therefore, the LADWP is projected to have sufficient future water supplies to support the construction of Alternative 4 (Project). Not only would the projected water supply exceed the estimated demand for potable water during construction, the demand on the potable water supply would be temporary and would be limited to the duration of construction. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not require new or expanded entitlements because sufficient water supplies would be available to serve the project. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not require new or expanded entitlements because sufficient water supplies would be available to serve the project. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact UTL-6. Would Alternative 4 (Project) be served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs during construction and operation?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore), and Shaft Site – Royal Palms

Construction

CEQA Analysis

Excavated material generated by the onshore tunnel would be sent to the JWPCP West shaft site and disposed of at an inland disposal facility. Impacts associated with Alternative 4 would be the same as those described in Alternative 1 for non-hazardous and hazardous excavated materials. There would be

no offshore tunnel; therefore, offshore sediment would not need to be disposed of at an ODMDS. Therefore, impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not be served by landfills with insufficient permitted capacity to accommodate the solid waste disposal. Impacts under CEQA would be less than significant.

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Construction of Alternative 4 (Project) would not be served by landfills with insufficient permitted capacity to accommodate the solid waste disposal. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact UTL-8. Would Alternative 4 (Project) require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs?

Tunnel Alignment – Figueroa/Western to Royal Palms (Onshore)

Construction

CEQA Analysis

It is assumed that the LADWP would provide power for the Figueroa/Western to Royal Palms onshore tunnel from the JWPCP West shaft site to Royal Palms. Therefore, only one provider would be responsible for providing the energy demand associated with the onshore tunnel construction.

The amount of energy required for the construction of the onshore tunnel would be greater than the existing demand for energy along this alignment; however, the estimated energy demand for construction is well within the estimated future projected supply for energy provided by the LADWP. The maximum peak power demand is estimated to be approximately 21,960 kVA (see Table 20-14), and construction of the Alternative 4 (Project) onshore tunnel alignment would be completed prior to 2020. The LADWP estimates a demand of approximately 6,876,000 kVA in 2020, as shown in Table 20-13. The estimated onshore tunnel demand would result in an addition of approximately 0.3 percent of the energy demand for

the LADWP in 2020. The LADWP estimates that it would have an excess of projected supply (approximately 7,721,000 kVA in 2020) when compared to project demand.

The power demand created by construction of the onshore tunnel alignment would be negligible when compared to the projected power supply and demand for the LADWP service area. Furthermore, the Sanitation Districts have already met with the LADWP about providing power during construction, and it was confirmed that there is sufficient power in the electrical grid where the shaft sites are located to support the tunneling operations without having to construct additional power generation facilities (Parsons 2011). Additionally, the demand on the energy supply would be temporary and would be limited to the duration of construction. Therefore, Alternative 4 (Project) power demand would be provided by power purchases made from the LADWP and would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alternations to existing facilities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

Shaft Sites – Royal Palms

Construction

CEQA Analysis

The energy provider for the Royal Palms shaft site would be the LADWP. The power supply estimates include the equipment necessary for the Royal Palms shaft site construction and the maintenance of the shaft site during tunnel construction. As such, it is appropriate to assume the amount of power demand at the Royal Palms shaft site would be within the estimates provided for the onshore tunnel alignment located between the JWPCP West shaft site and the Royal Palms shaft site. The energy demand from construction at the Royal Palms shaft site would be negligible compared to the projected demand for the LADWP throughout the construction period, and there would be sufficient supply to meet the demand (see Table 20-7, Table 20-13, and Table 20-14). The shaft would be constructed primarily with standard diesel-powered equipment that would not draw from the local utility provider. Additionally, the demand on the energy supply would be temporary and would be limited to the duration of construction. Therefore, power demand would be provided by power purchases made from the LADWP and would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alteration to existing facilities. Impacts would be less than significant.

NEPA Analysis

Environmental impacts would be the same as described for the CEQA analysis, and would occur for the duration of construction. Baseline conditions would resume upon termination of construction. With respect to the Corps' NEPA scope of analysis described in Section 3.5, the environmental impacts would be considered indirect impacts.

CEQA Impact Determination

Construction of Alternative 4 (Project) would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs. Impacts under CEQA would be less than significant.

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

NEPA Impact Determination
Construction of Alternative 4 (Project) would not require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs. Impacts under NEPA would be less than significant with respect to the No-Federal-Action Alternative (see Section 3.4.1.6).

Mitigation
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

20.4.6.3 Impact Summary – Alternative 4

Impacts on utilities, service systems, and energy for Alternative 4 (Program), which are the same as Alternative 1 (Program), are summarized in Table 20-17. Impacts analyzed in this EIR/EIS for Alternative 4 (Project) are summarized in Table 20-22. The proposed mitigation, where feasible, and the significance of the impact before and following mitigation are also listed in the table.

Table 20-22. Impact Summary – Alternative 4 (Project)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact UTL-3. Would Alternative 4 (Project) require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

Table 20-22 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
Impact UTL-4. Would Alternative 4 (Project) require new or expanded entitlements because sufficient water supplies would not be available to serve the project?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-6. Would Alternative 4 (Project) be served by landfill(s) with insufficient permitted capacity to accommodate the project's solid waste disposal needs during construction and operation?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction

Table 20-22 (Continued)

Project Element	Impact Determination Before Mitigation	NEPA Direct or Indirect	Mitigation	Residual Impact After Mitigation
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Impact UTL-8. Would Alternative 4 (Project) require new, offsite energy supply and distribution infrastructure or capacity-enhancing alterations to existing facilities that are not anticipated by adopted plans or programs?				
Tunnel Alignment				
Figueroa/ Western to Royal Palms (Onshore)	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Shaft Site				
JWPCP West	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction
Royal Palms	CEQA Less Than Significant Impact During Construction	N/A	No mitigation is required.	CEQA Less Than Significant Impact During Construction
	NEPA Less Than Significant Impact During Construction	Indirect	No mitigation is required.	NEPA Less Than Significant Impact During Construction

20.4.7 Alternative 5 (No-Project Alternative)

Pursuant to CEQA, an EIR must evaluate a no-project alternative. A no-project Alternative describes the no-build scenario and what reasonably would be expected to occur in the foreseeable future if the project were not approved. Under the No-Project Alternative for the Clearwater Program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the JOS 2010 Master Facilities Plan (2010 Plan) (Sanitation Districts 1994), which includes all program elements proposed under the Clearwater Program, excluding process optimization at the WRPs, as described in Section 3.4.1.5. A new or modified ocean discharge system would not be constructed. As a result, there would be a greater potential for an emergency discharge into various water courses, as described in Section 3.4.1.5.

Because there would be no construction of a new or modified JWPCP ocean discharge system, the Corps would not make any significance determinations under NEPA and would not issue any permits or discretionary approvals for dredge or fill actions or for transport or ocean disposal of dredged material.

20.4.7.1 Program

Alternative 5 (Program) would consist of the implementation of the 2010 Plan. The impacts for conveyance improvements, plant expansion at the SJCWRP, WRP effluent management, JWPCP solids processing, and JWPCP biosolids management for Alternative 5 (Program) would be the same as for Alternative 1 (Program) and would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994).

20.4.7.2 Project

Alternative 5 does not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for an emergency discharge of secondary effluent into the Wilmington Drain as described in Section 3.4.1.5. For additional details regarding capacity of the Wilmington Drain, see discussion under Impact HYD-7 in Chapter 11. Discharges into the Wilmington Drain would flow into Machado Lake (also known as Harbor Lake) in Ken Malloy Harbor Regional Park. The temporary release of secondary treated effluent to Machado Lake would be considered a violation of the JWPCP's NPDES permit.

The Wilmington Drain has the capacity to handle a discharge from the JWPCP during normal flow or dry-weather flow events. However, during a storm event, the combined stormflow and discharge from the JWPCP could exceed the capacity of the Wilmington Drain. If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the JWPCP could overflow and untreated wastewater could enter various water courses. Untreated wastewater overflowing out of the sewers would likely enter the adjacent stormdrains tributary to the Dominguez Channel and the Los Angeles River. Although the existing capacities could be exceeded, no new stormwater drains or expansion of stormwater drains would be constructed because the Sanitation Districts cannot legally discharge into the Wilmington Drain or allow an overflow to enter any stormwater drains. Therefore, Alternative 5 (Project) would not require or result in the expansion of existing stormwater drainage facilities.

However, a discharge of secondary effluent into the Wilmington Drain or a sewer overflow would both result in exceeding wastewater treatment requirements of the RWQCB. In the case of a sewer overflow, there could be disruptions to utilities, such as wastewater and stormwater conveyance systems, due to the increased flow demands. Additionally, sewer overflow that is not captured by stormdrains could result in intrusion and contamination of entrenched utilities, groundwater, and local fresh water production wells. Therefore, various utilities could be adversely impacted.

It is unlikely that an emergency discharge into the Wilmington Drain or a sewer overflow would be captured and treated subsequently. There are no feasible mitigations that would reduce these impacts. Therefore, impacts would be significant and unavoidable.

20.4.7.3 Impact Summary – Alternative 5

Impacts on utilities, service systems, and energy for Alternative 5 (Program) would be the same as those summarized for Alternative 1 (Program) in Table 20-17, excluding process optimization. Note that the mitigation measures for Alternatives 1 through 4 (Program) are not applicable to Alternative 5 (Program). Significant impacts for Alternative 5 (Project) are summarized in Table 20-23.

Table 20-23. Impact Summary – Alternative 5 (Project)

Project Element	Impact Determination Before Mitigation	Mitigation	Residual Impact After Mitigation
Impact UTL-1. Would Alternative 5 (Project) exceed wastewater treatment requirements of the applicable regional water quality control board?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation

20.4.8 Alternative 6 (No-Federal-Action Alternative)

Pursuant to NEPA, an environmental impact statement (EIS) must evaluate a no-federal-action alternative. The No-Federal-Action Alternative for the Clearwater Program consists of the activities that the Sanitation Districts would perform without the issuance of the Corps' permits. The Corps' permits would be required for the construction of the offshore tunnel, construction of the riser and diffuser, the rehabilitation of the existing ocean outfalls, and the ocean disposal of dredged material. Without a Corps permit to work on the aforementioned facilities, the Sanitation Districts would not construct the onshore tunnel and shaft sites. Therefore, none of the project elements would be constructed under the No-Federal-Action Alternative. The Sanitation Districts would continue to use the existing ocean discharge system, which could result in emergency discharges into various water courses, as described in Sections 3.4.1.5 and 20.4.7.2. The program elements for the recommended Alternative would be implemented in accordance with CEQA requirements. However, based on the NEPA scope of analysis established in Sections 3.1.4.2 and 3.5, these elements would not be subject to NEPA because the Corps would not make any significance determinations and would not issue any permits or discretionary approvals.

20.4.8.1 Program

The program elements are beyond the NEPA scope of analysis.

20.4.8.2 Project

The impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project).

20.4.8.3 Impact Summary – Alternative 6

The program is not analyzed under Alternative 6. Significant impacts for Alternative 6 would be the same as summarized in Table 20-23 for Alternative 5 (Project).

20.4.9 Comparison of Significant Impacts and Mitigation for All Alternatives

A summary of significant impacts on utilities, service systems, and energy resulting from the construction and/or operation of program and/or project elements is provided in Table 20-24 Impacts are compared by alternative. Proposed mitigation, where feasible, and the significance of the impact following mitigation under CEQA and NEPA are also listed in the table.

Table 20-24. Comparison of Significant Impacts and Mitigation for Utilities, Service Systems, and Energy for All Alternatives

Element	Impact Before Mitigation	Mitigation Measure	Residual Impact After Mitigation
Alternative 5 (Project)			
Impact UTL-1. Would Alternative 5 (Project) exceed wastewater treatment requirements of the applicable regional water quality control board?			
Emergency Discharge	CEQA Significant Impact During Operation	No mitigation is feasible.	CEQA Significant and Unavoidable Impact During Operation
Alternative 6 (Project)			
Impact UTL-1. Would Alternative 6 (Project) exceed wastewater treatment requirements of the applicable regional water quality control board?			
Emergency Discharge	NEPA Significant Impact During Operation	No mitigation is feasible.	NEPA Significant and Unavoidable Impact During Operation

Chapter 21
CUMULATIVE AND GROWTH-INDUCING IMPACTS

21.1 Introduction

This chapter presents California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) requirements for cumulative impact analysis. Specifically, it analyzes the potential for the recommended plan and its alternatives to have significant cumulative effects when combined with other past, present, and reasonably foreseeable future projects in each resource area's cumulative geographic scope. This chapter also presents the CEQA requirements for growth-inducing impacts. It analyzes the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. This includes ways in which the proposed project would remove obstacles to population growth or trigger the construction of new community services facilities that could cause significant effects (CEQA Guidelines, Section 15126.2).

Requirements related to cumulative impact analysis and a description of the related projects are discussed in Sections 21.1.1 and 21.1.3, respectively. Cumulative impacts are organized by resource topic and analyzed in Section 21.2. Requirements related to growth-inducing impact analysis are discussed in Section 21.1.2 and the analysis is presented in Section 21.3.

21.1.1 Requirements for Cumulative Impact Analysis

NEPA (40 Code of Federal Regulations [CFR] 1508.7 and 40 CFR 1508.25[a][2]) and the CEQA Guidelines (14 California Code of Regulations 15130) require a reasonable analysis of the significant cumulative impacts of a proposed project. Cumulative impacts are defined by CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, Section 15355).

Cumulative impacts are further described as follows:

a) The individual effects may be changes resulting from a single project or a number of separate projects.

b) The cumulative impacts from several projects are the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (40 CFR 1508.7 and CEQA Guidelines, Section 15355[b]).

Furthermore, according to CEQA Guidelines Section 15130(a)(1):

> As defined in Section 15355, a *cumulative impact* consists of an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.

In addition, as stated in the CEQA Guidelines, Section 15064(i)(5):

> The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable.

NEPA also requires analysis of cumulative impacts; 40 CFR Section 1508.7 states:

> Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The United States (U.S.) Army Corps of Engineers (Corps), as part of its cumulative impact analysis, is required to identify:

- Areas in which the effects of the proposed action would occur
- Effects that are expected in those areas from the proposed action
- Past, present, and reasonably foreseeable future actions that have or that are expected to have impacts in the same area
- Impacts or expected impacts from these other actions
- Overall impacts that can be expected if the individual impacts are allowed to accumulate (*Fritiofson v. Alexander*, 772 F.2d 1225, 1245 [5th Cir. 1985])

Therefore, the following cumulative impact analysis focuses on whether the impacts of the recommended plan or its alternatives are cumulatively considerable within the context of impacts caused by other past, present, or reasonably foreseeable future projects. The cumulative impact scenario considers other projects proposed within the area defined for each resource that have the potential to contribute to cumulatively considerable impacts.

21.1.2 Requirements for Growth-Inducing Impact Analysis

The CEQA Guidelines require an environmental impact report (EIR) to discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. This includes ways in which the proposed project would remove obstacles to population growth or trigger the construction of new community services facilities that could cause significant effects (CEQA Guidelines, Section 15126.2). In addition, a project would directly induce growth if it would directly foster population growth or the construction of new housing in the surrounding environment (e.g., if it would remove an obstacle to growth by expanding existing infrastructure).

NEPA requires an environmental impact statement to examine the potential of the proposed project to significantly or adversely affect the environment; potential impacts could be either direct or indirect. Indirect effects (NEPA, 40 CFR 1508.8[b]) may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air, water, and other natural systems including ecosystems.

It should be noted that growth-inducing effects are not to be construed as necessarily beneficial, detrimental, or of little significance to the environment. This issue is presented to provide additional information in which this project could contribute to significant changes in the environment, beyond the direct consequences of developing the project examined in the preceding chapters of this environmental impact report/environmental impact statement (EIR/EIS). The analysis focuses on whether the project would directly or indirectly stimulate growth in the surrounding area.

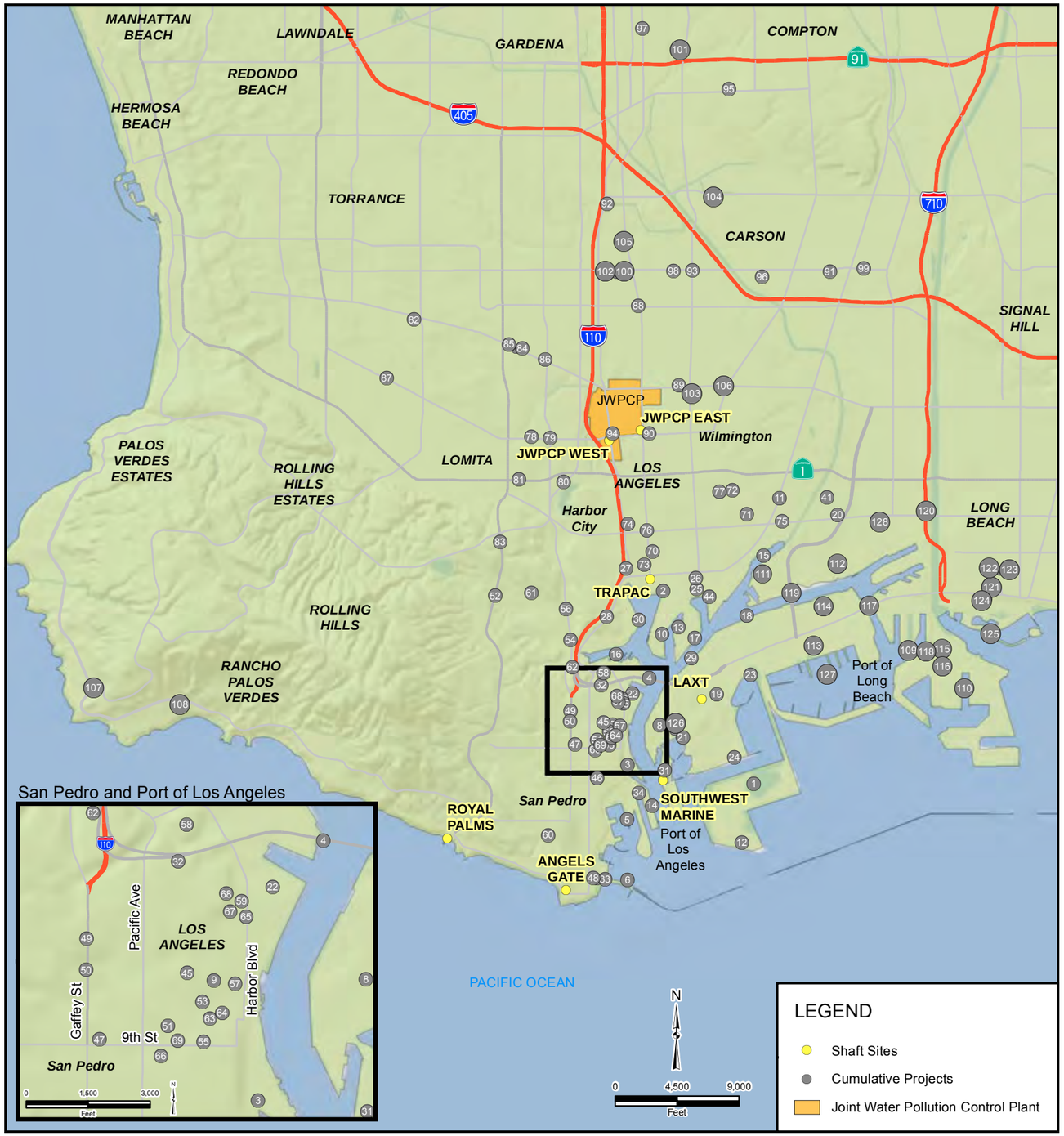
21.1.3 Cumulative and Growth-Inducing Methodology

For this EIR/EIS, related area projects with a potential to contribute to cumulative impacts were identified using one of two approaches: the list methodology or the projection methodology. A list approach relies on a list of past, present, and probable future projects producing related or cumulative impacts. These may include projects outside the lead agency's control. The projections approach relies on a summary of projections contained in adopted local, regional, or statewide plans, or related planning documents that describe or evaluate conditions that contribute to a cumulative effect. The program-level analysis relies on a projection methodology, and the project-level analysis uses a combined projection and list methodology. There are advantages and disadvantages to each approach. A list approach is usually considered more straightforward, but it can be criticized for being under inclusive. A summary of projections approach may be more comprehensive but can be problematic unless the projections in the plans are up-to-date (Gordon and Herson 2011). Depending on the resource evaluated, one method or a combination of both may best fit the needs of the analysis. For example, project-level air quality, noise, and traffic/circulation analyses use a projection or a combined list and projection approach as described herein. Cumulative analysis of air quality impacts uses projections from the South Coast Air Basin (SCAB) 2007 Air Quality Management Plan (AQMP). The traffic/circulation cumulative analysis uses annual regional growth, which is described in Chapter 18. The cumulative analysis of noise impacts relies on both the annual regional growth rates utilized for traffic (because traffic is an important contributor to noise impacts) and the list of related projects documented in Section 21.1.4. Most of the resource areas analyzed on the project level use a list of closely related projects that would be constructed in the cumulative geographic scope (which differs by resource and sometimes for impacts within a resource; cumulative regions of influence are documented in Section 21.2). The list of related projects is provided on Figure 21-1. The program analysis relies on relevant related plans for each topical area. Furthermore, as program elements become projects in their own right, they will be subject to subsequent CEQA review that will also include a cumulative impacts analysis.

For purposes of thresholds, the concept of cumulatively considerable effects is derived from the CEQA Guidelines, and this CEQA concept is adequately protective and encompassing of the NEPA concept of cumulatively significant effects. The significance criteria used for the cumulative resource analysis are the same as those analyzed in the respective resource chapter.

To address growth-inducing impacts, the potential growth-inducing effects are examined through the following considerations:

- Induction of substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)



Port of Los Angeles Projects

1. Pier 400 Container Terminal and Transportation Corridor Project
2. Berths 136-147 Marine Terminal, West Basin
3. San Pedro Waterfront Project
4. Channel Deepening Project
5. Cabrillo Way Marina, Phase II
6. Artificial Reef, San Pedro Breakwater
7. Canners Steam Demolition
8. Berth 226-236 (Evergreen) Container Terminal Improvements Project
9. Port of Los Angeles Charter School and Port Police Headquarters, San Pedro
10. SSA Outer Harbor Fruit Facility Relocation
11. Crescent Warehouse Company Relocation
12. Plains All American (formerly Pacific Energy) Oil Marine Terminal, Pier 400
13. Ultramar Lease Renewal Project
14. Westway Decommissioning
15. Consolidated Slip Restoration Project
16. Berths 97-109, China Shipping Development Project
17. Berths 171-181, Pasha Marine Terminal Improvements Project
18. Berths 206-209 Interim Container Terminal Reuse Project
19. LAXT Dome and Site Demolition
20. Southern California International Gateway Project (SCIG)
21. Pan-Pacific Fisheries Cannery Buildings Demolition Project
22. San Pedro Waterfront Enhancements Project
23. Joint Container Inspection Facility
24. Berth 302-305 (APL) Container Terminal Improvements Project
25. South Wilmington Grade Separation
26. Wilmington Waterfront Master Plan (Avalon Blvd. Corridor Project)
27. "C" Street/Figueroa Street Interchange
28. Port Transportation Master Plan
29. Berths 212-224 (YTI) Container Terminal Improvements Project
30. Berths 121-131 (Yang Ming) Container Terminal Improvements Project
31. Southwest Marine Demolition Project
32. I-110 / SR 47 Connector Improvement Program
33. Inner Cabrillo Beach Water Quality Improvement Prog
34. Proposed Marina Research Area

Port of Los Angeles and/or Port of Long Beach Potential Port-Wide Operational Projects

35. Terminal Free Time*
36. Extended Terminal Gates (Pier Pass)*
37. Shuttle Train/Inland Container Yard*
38. Origin/Destination and Toll Study*
39. Virtual Container Yard*
40. Increased On-Dock Rail Usage*
41. Union Pacific Railroad ICTF Modernization Project
42. Optical Character Recognition*
43. Truck Driver Appointment System*
44. Port Police Wilmington Substation
45. Port Police New Station

Community of San Pedro Projects

46. 15th Street Elementary School
47. Pacific Corridors Redevelopment Project
48. Cabrillo Marine Aquarium Expansion
49. Gas station and mini-mart
50. Fast Food Restaurant w/drive-thru
51. Mixed use development, 407 Seventh Street
52. Condominiums, 28000 Western Ave
53. Pacific Trade Center
54. Single Family Homes (Gaffey Street)
55. Mixed-use development, 281 W 8th Street
56. Target (Gaffey Street)
57. Palos Verdes Urban Village
58. Temporary Little League Park
59. Condos, 319 N. Harbor Boulevard

Community of Wilmington Projects

60. LAUSD South Region High School #15 Private High School
61. Single Family Homes
62. Center Street Lofts - Residential Lofts
63. and Specialty Retail La Salle Lofts – Condominiums
64. Ocean View Landing - Condominiums
65. and Specialty Retail Condominiums
66. Toberman Village – Apartments
67 Harborside Terrace – Townhomes
68. Condominiums
69. E Street Cold Logistics – Warehouses
70. East Wilmington Greenbelt Community
71. Center Distribution center and warehouse
72. Dana Strand Public Housing
73. Redevelopment Project Vermont Christian School Expansion
74. Retail
75. Bakery/Restaurant
76. Single Family Homes

Projects in Carson, Rancho Palos Verdes, Unincorporated Los Angeles County, and Community of Harbor City

78. 1437 Lomita Boulevard Condominiums
79. Harbor City Child Development Center
80. Kaiser Permanente South Bay Master Plan
81. Drive-through restaurant, Harbor City
82. K to 8th Private School
83. Ponte Vista
84. Warehouses, 1351 West Sepulveda Blvd
85. Sepulveda Industrial Park
86. Apartments
87. Office Building and Medical Office Building
88. Day Care Center
89. Office Building
90. Retail Self-Storage
91. Warehouse
92. Office Building Manufacturing Space
93. Carson City Center – Condominiums
94. Office Building
95. Boulevards at South Bay - Mixed Use Development
96. Mobile Home Estates
97. Automobile Dismantling Yard
98. Affordable Residential Housing - 65 units
99. Expansion of Church
100. Adult Day Care
101. Office/Warehouse/Equipment Storage
102. Sanctuary
103. Single Family Homes
104. Transit Center
105. Wholesale car auction
106. Gym
107. Animal Education Center
108. Commercial Agricultural Use

Port of Long Beach Projects

109. Middle Harbor Terminal Redevelopment
110. Piers G & J Terminal Redevelopment Project
111. Pier A West Remediation Project
112. Pier A East
113. Pier T, TTI formerly Hanjin Terminal, Phase III
114. Pier S Marine Terminal
115. Administration Building Replacement Project
116. San Pedro Bay Rail Study
117. Gerald Desmond Bridge Replacement Project
118. Chemoil Marine Terminal, Tank Installation

Alameda Corridor Transportation Authority and Caltrans Projects

119. Schuyler Heim Bridge Replacement and State Route (SR) 47 Terminal Island Expressway
120. I-710 (Long Beach Freeway) Major Corridor Study

City of Long Beach Projects

121. Renaissance Hotel Project
122. D'Orsay Hotel Project
123. City Place Development
124. The Pike at Rainbow Harbor
125. Queensway Bay Master Plan
126. Canners Steam Demolition
127. Port of Long Beach Installation Restoration Site (West Basin) Dredging Project
128. Edison Avenue Closure

*Project not shown on figure because it is not specific to a location, or the location has not been determined

FIGURE 21-1

CLEARWATER Program

Cumulative Projects Location Map

Source: Sanitation Districts of Los Angeles County 2011, ESRI 2011, Thomas Bros 2011

- Removal of obstacles to growth (e.g., the construction or extension of major infrastructure facilities that do not presently exist in the project area or through changes in existing regulations pertaining to land development).
- Expansion of requirements for one or more public services to maintain desired levels of service as a result of the project.
- Facilitation of economic effects that could result in other activities that would significantly affect the environment.
- Setting of a precedent that could encourage and facilitate other activities that could significantly affect the environment.

The growth-inducing analysis presented focuses on whether the alternatives would directly or indirectly stimulate or accommodate growth in the surrounding area.

21.1.4 Projects Considered in the Cumulative Analysis

History of Development in the Program and Project Area

This brief history of population growth and development in the program and project areas provides a context for the past, present, and future projects that are considered in this cumulative impact analysis. Southern California was inhabited by Native Americans for millennia; however, the area did not begin to develop until after settlement by Europeans. In 1781, El Pueblo de Nuestra Señora la Reina de Los Angeles de Porciunula was founded. During that time, Los Angeles began to grow and became the center of the settlements of the Spanish aristocracy. The surrounding land throughout the Los Angeles Basin was divided into Spanish and Mexican land grant ranchos. Many of the ranchos were later subdivided, and these subdivisions grew into communities that exist today.

The establishment of several industries in the Los Angeles region in the late 19th and early 20th century (most notably the oil, agriculture, and motion picture industries) has fueled the growth of the greater Los Angeles area into an extensively developed urban area (Jones & Stokes 1994:16-3). From 1870 to 1900, there was a period of intensive urbanization in the Los Angeles area. The area experienced unprecedented regional growth in industry, residential development, and commerce. The first railroad line connecting Los Angeles to the nation-wide railway system was the Southern Pacific, extending south from San Francisco. The Southern Pacific began regular train service in Los Angeles in January 1874. The Los Angeles and San Pedro Railroad operated between Los Angeles and Wilmington and represented the first reliable means of moving cargo from ships coming into San Pedro.

Southern California also experienced a population explosion during the 1880s, which increased the importance of the Port at San Pedro and also resulted in a local population eruption in the Wilmington and San Pedro area (Silka 1993:35). With improved rail transportation, thousands of people immigrated to Los Angeles, and the increased population brought a need for more construction and living supplies, much of which came from ships destined for the San Pedro and Wilmington areas. The demand for lumber, coal, and other goods from the Los Angeles Basin spurred an increase in merchant vessels in San Pedro Bay. This, in turn, created a demand for dock workers, carpenters, ship fitters, laborers, merchant mariners, railroad workers, and men working supporting businesses such as shipyards. With the completion of a sea-wall, after 1871, and the development of the railroad, two-way flow of passengers and merchandise was stimulated. In 1899, construction began on the 2-mile breakwater in San Pedro Bay.

The rapid population growth was due to the development and industrialization of the period. Following the first arrival of the Southern Pacific, connecting the city to the nation-wide rail system in 1876,

population increased 12-fold, reaching 12,000 people. In 1890, the city had grown to 50,100. In the following decade, the population increased to 102,500 (Swope 1997:4–5).

After 1900, Los Angeles saw continued steady growth of population and industry. The advent of the automobile began nation-wide cultural changes that prompted increased movement of goods and people. New industries, such as oil production and refining, aircraft manufacturing, and motion pictures, also developed in Los Angeles, requiring a larger work force. The population of Los Angeles, 102,500 in 1900, more than tripled to 319,000 in 1910. This number was nearly doubled again by 1920, when the population reached 577,000 individuals. Oil was discovered on nearby Rancho San Pedro in 1920, which led to a new era of prosperity. Despite the highly speculative real estate boom in 1923 that inflated property values, especially in commercial real estate, growth peaked between 1925 and 1929. Los Angeles continued to grow, even during the Great Depression, when the population increased to 1,504,277 people. Movie-making was an industry that boomed during the Depression in the 1930s, and Los Angeles became the hub for this activity.

Today, the Sanitation Districts serve over 5 million people within the dense urban area of Los Angeles County. Development primarily consists of residential, commercial, and industrial uses. The Ports of Los Angeles and Long Beach continue to be hubs of commerce and combined are the largest port complex in the nation.

Current and Future Projects

A total of 128 present or reasonably foreseeable future projects (approved or proposed) were identified within the general vicinity of the recommended plan area that could contribute to cumulative impacts (Figure 21-1). (As discussed in Section 21.1.2 and further in the resource-specific sections, some resource analyses use a projection approach encompassing a larger cumulative geographic scope; for these resources, a larger set of past, present, and reasonably foreseeable future projects was included for analysis of cumulative impacts.)

For the purposes of this EIR/EIS, the timeframe of current or reasonably anticipated projects extends from 2008 to 2050, and the vicinity is defined as the area over which effects of the recommended plan or its alternatives could contribute to cumulative effects. The cumulative regions of influence for individual resources are documented further in each of the resource-specific subsections in Section 21.2.

21.2 Cumulative Impact Analysis by Resource

The following sections analyze the cumulative impacts identified for each resource area. The timeline for impacts on resources that have occurred in the past would date back to pre-Los Angeles Basin development (approximately 1870) condition. Present impacts would be those that have occurred since the issuance of the notice of preparation in October 2008, and future effects would be those that would take place by 2050.

21.2.1 Aesthetic Resources

21.2.1.1 Scope of Analysis

The scope of analysis for aesthetic resources primarily encompasses the project area because program elements were all deemed to have less than significant impacts or no impacts as documented in the Preliminary Screening Analysis in Appendix 1-A. Program elements, with the exception of the conveyance system, would generally occur within the existing site of the facility. The conveyance system would not have aesthetic impacts because the facilities would be located underground. For the project, the tunnel alignments would be located underground and would not be visible at ground level. The Joint Water Pollution Control Plant (JWPCP) East and JWPCP West shaft sites are primarily surrounded by industrial, residential, and commercial land uses. The visual quality of these shaft sites and surroundings is low to moderate because these areas are highly developed with industrial uses. The Angels Gate and Royal Palms shaft sites are located in a coastal environment and are surrounded by recreational and residential land uses. The visual quality of these shaft sites and surroundings is moderate to high because these areas are developed with compatible uses and have coastal views. The Trans Pacific Container Service Corporation (TraPac), Los Angeles Export Terminal (LAXT), and Southwest Marine shaft sites are located in an industrial environment. All of these locations are subject to construction activities. Construction is a common visual element in the environs of the JWPCP shaft sites because the area is more developed and industrial activities are more common. The coastal areas are more static; construction activities from maintenance of existing infrastructure and infill and redevelopment projects are more likely than large development projects. Infill and redevelopment projects help minimize visual impacts in coastal areas because they tend to be smaller in scale and compatible with existing land uses, yet do result in visual impacts to a lesser degree.

21.2.1.2 Impacts of Past, Present, and Foreseeable Future Projects

Figure 21-1 identifies 128 projects in the vicinity of the project. However, only a few are in the vicinity of shaft sites where construction activity would occur. In the Port of Los Angeles, there are a number of projects near the TraPac, LAXT, and Southwest Marine shaft sites. However, this is a heavily industrialized area where construction activities are common and would not create a cumulative visual impact due to the nature of activities at the port, which involve very tall gantry cranes, stacking of containers, transportation projects that include intermodal interchanges, and large ships coming and going at the port. Many of the projects in the vicinity of these shaft sites involve container terminal improvements, which by their nature require large construction equipment. Projects near the Angels Gate shaft site include the Cabrillo Aquarium Expansion (Project 48), the Inner Cabrillo Beach Water Quality Improvement Program (Project 33), and creation of an artificial reef at the San Pedro Breakwater (Project 6). The closest project to the Royal Palms shaft site is the construction of Los Angeles Unified School District's South Region High School (Project 60), which was determined to be sufficiently far from the shaft site and because of intervening topography would not contribute to a cumulatively considerable visual impact. Cumulative visual impacts for Alternatives 3 and 4 are related to coastal resources and the visual sensitivity in the areas of the Angels Gate and Royal Palms shaft sites.

Alternative 1 Through Alternative 4

Alternatives 1 through 4 would result in significant temporary aesthetic impacts during project construction. Impacts associated with the noise barrier that would be in place during construction at the JWPCP East, Angels Gate, and Royal Palms shaft sites (depending on alternative) would be significant and unavoidable after mitigation. Additionally, no mitigation is feasible to reduce impacts from construction on the existing ocean outfalls.

Impacts associated with the JWPCP East shaft site would be localized. The construction site would have a relatively small footprint and scale when compared to the number of cumulative projects (including single- and multi-story developments) that will occur over a much larger area. Therefore, within the context of past, present, and future projects, and in consideration to the short duration of construction, the incremental effect would not be cumulatively considerable.

The combined incremental effect on the coastal viewshed for construction of Alternative 4, including the noise barrier that would be in place during construction at the Royal Palms shaft site and construction activities on the existing ocean outfalls, would be significant after mitigation. Therefore, the contribution is cumulatively considerable and construction of Alternative 4 would result in cumulative visual impacts under CEQA and NEPA.

Once operational, project elements would not result in significant visual impacts because construction would no longer be taking place, the noise barriers would be removed, and visual elements from shaft site access hatches, minimal aboveground equipment, and, potentially, a surge tower would be negligible within the landscape where they are located after mitigation. The incremental effect on cumulative visual impacts during operation of Alternatives 1 through 4 would be less than significant after mitigation. Therefore, the contribution is not cumulatively considerable, and operation of Alternatives 1 through 4 would not result in cumulative visual impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

The project would not occur under Alternatives 5 and 6, and as a consequence of taking no action, impacts on visual resources would be less than significant. Therefore, the contribution is not cumulatively considerable, and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would not result in cumulative impacts on visual resources.

21.2.2 Air Quality

21.2.2.1 Scope of Analysis

The region of analysis for cumulative effects on air quality is the SCAB. The SCAB experiences chronic exceedance of state and federal ambient air quality standards. Therefore, exceedances of established South Coast Air Quality Management District (SCAQMD) thresholds must be considered an adverse consequence. The SCAB is currently in nonattainment for ozone, particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). These pollutant nonattainment conditions within the region are deemed to be cumulatively considerable.

21.2.2.2 Impacts of Past, Present, and Foreseeable Future Projects

Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. Therefore, the construction and operational impacts of related projects in areas surrounding the program and project activity areas would be cumulatively considerable, within the SCAB, if their combined construction or their combined operational emissions would exceed the SCAQMD daily emission thresholds for construction and operation, respectively. In the time period between the beginning and end of proposed program construction, project construction, and program operation, several large construction projects would occur in the surrounding areas (see Figure 21-1) that could overlap and contribute to cumulative construction and operational impacts.

Alternative 1 Through Alternative 4

The analysis that follows considers the potential cumulative effects, if any, that would result from construction and operation of the proposed program and project elements, combined with construction and operation of related projects, identified in Figure 21-1.

Activities for Which No Potentially Significant Cumulative Impacts Would Result. When considering the effects of past, present, and reasonably foreseeable future projects in combination with the anticipated effects of the program and project elements, the following impacts are not deemed to be cumulatively considerable:

- Construction and operation of program and project elements would not conflict with or obstruct implementation of the AQMP, as discussed in Chapter 5, and as such would not have incremental effects under CEQA and NEPA.
- Operational emissions would result from program elements only. Because operational project elements would consist of the use of a new or modified ocean discharge system to convey secondary effluent from the JWPCP to the ocean primarily by gravity, these activities would not emit pollutants. Additionally, in accordance with Section 1.4.2, the program elements are excluded from the NEPA scope of analysis. As presented in Chapter 5, emissions associated with operation of program elements would not have incremental air quality effects under CEQA.
- Localized impacts from program construction activities would not have an incremental localized air quality effect under CEQA prior to mitigation.
- Localized impacts from project construction activities would have an incremental localized air quality effect under CEQA and NEPA for nitrogen oxides (NO_X) prior to mitigation. Emissions would be reduced with the implementation of mitigation measures presented in Chapter 5 below the level of significance.
- Odors from fuel combustion during program and project construction and operation, as well as odors from wastewater treatment during program operation, would not have incremental effects under CEQA and NEPA, as presented in Chapter 5.
- Toxic air contaminants (TAC) would result from program operations only. As presented in Chapter 5, TAC emissions associated with operation of program elements would not have incremental air quality effects under CEQA prior to mitigation.
- Concurrent peak day emissions of PM_{10} and $PM_{2.5}$ (combined construction and operational impacts) would not exceed the SCAQMD daily emissions thresholds at any time, as described in Chapter 5.

Because the proposed elements would be less than significant following mitigation, they are not considered to have significant cumulative air quality impacts.

Activities for Which Potentially Significant Cumulative Impacts Would Result. When considering the effects of past, present, and reasonably foreseeable future projects in combination with the anticipated effects of the proposed program and project elements, the following impacts are deemed to be cumulatively considerable:

- Emissions associated with construction of program and project elements were deemed to have an incremental regional air quality effect under CEQA prior to mitigation. Emissions would be reduced with the implementation of mitigation measures presented in Chapter 5, but would continue to have an incremental regional air quality effect for NO_X under CEQA.

- Emissions associated with the construction of project elements were deemed to have an incremental regional air quality effect under NEPA prior to mitigation. Emissions would be reduced with the implementation of mitigation measures presented in Chapter 5, but would continue to have an incremental regional air quality effect for NO_X under NEPA.

Most of the air quality impacts from related projects would result from non-stationary sources, such as motor vehicles and construction equipment. The impacts, described above, represent additions to the non-stationary source emissions burden of the SCAB. Although, in the case of construction emissions, the impact would be temporary, NO_X is a precursor for ozone and, when considered with other related projects, could contribute cumulatively to the SCAB's ozone nonattainment status. Therefore, these exceedances would be considered a cumulative temporary impact.

The incremental effect on cumulative air quality impacts for NO_X during construction of Alternatives 1 through 4 would be significant and unavoidable. Therefore, the contribution is cumulatively considerable, and construction of Alternatives 1 through 4 would result in cumulative air quality impacts under CEQA and NEPA. Operation of Alternatives 1 through 4 would not make a cumulatively considerable contribution to cumulative air quality impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternative 5 is the No-Project Alternative, as required by CEQA. All program construction and operation impacts would be the same as for Alternatives 1 through 4, excluding impacts associated with process optimization at the water reclamation plants (WRPs). Alternative 5 (Program) would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994). As discussed in Chapter 5, program impacts would be less than significant. Because the proposed program elements would be less than significant after mitigation, they are not considered to have significant cumulative construction air quality impacts. A new or modified ocean discharge system would not be constructed, and as a consequence of taking no action, there would be a greater potential during operation for emergency discharges of secondary effluent and/or sewer overflows into various water courses. However, past, present, and future foreseeable projects would not result in persistent odors in the areas of discharge, and a periodic emergency discharge would not result in a significant contribution to cumulative impacts.

Alternative 6 is the No-Federal Action Alternative, as required by NEPA. Although the program is not analyzed under Alternative 6, it is part of the cumulative scope of analysis because it is a foreseeable project. The combined effects from the No-Federal-Action Alternative and past, present, and foreseeable future projects would result in cumulatively considerable regional air quality impacts. However, the No-Federal-Action Alternative would not contribute to air quality impacts and, therefore, its incremental effect would not be cumulatively considerable.

In summary, the incremental effect on cumulative air quality impacts from Alternatives 5 and 6 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternative 5 under CEQA and operation of Alternative 6 under NEPA would not result in cumulative impacts on air quality resources.

21.2.3 Biological Resources (Terrestrial)

21.2.3.1 Scope of Analysis

The cumulative effects analysis examines the potential for cumulative impacts on terrestrial biological resources from the program and project when considered in addition to past, present, and foreseeable future projects within the cumulative effects analysis area. The focus of the analysis is on those resources that inhabit the vicinity of program and project elements. The cumulative effects analysis area is located within the Southern California coastal ecoregion. In the past, the vegetation of this region was dominated by chaparral and sage scrub habitats with pockets of woodlands, wetlands, and riparian habitats. A variety of wetlands and riparian vegetation was found along perennial and seasonal watercourses. Currently, these vegetation patterns persist in undeveloped areas. However, landscaped vegetation and impervious surfaces (roads, parking, buildings, etc.) dominate the current land cover condition. Watercourses are now heavily managed, and flood control facilities, including concrete-lined channels and detention/debris basins, have replaced biologically functioning riparian habitat along most of the length of the major streams and rivers. Within the cumulative effects area, critical habitat has been designated for two terrestrial species, California coastal gnatcatcher and Palos Verdes blue butterfly. Listed species under the Endangered Species Act (federal and state) that occur within the cumulative effects area include California coastal gnatcatcher in coastal scrub habitat, and least Bell's vireo in riparian habitat. Several species of concern may also inhabit habitat in the vicinity of program and project elements including yellow warbler, yellow-breasted chat, burrowing owl, and western pond turtle in riparian areas; and pocketed free-tailed bat near the JWPCP. Significant Ecological Areas have been designated along the coast of the Palos Verdes Peninsula, and in riparian habitat in the vicinity of the Whittier Narrows Water Reclamation Plant.

21.2.3.2 Impacts of Past, Present, and Foreseeable Future Projects

With regard to terrestrial biological resources, the significance of cumulative effects depends not only on the direct impacts of each individual project, but also the timing and proximity of the projects, the proximity of the projects to migration corridors and special habitats, and the overall character of the area that includes multiple projects. For program elements, construction would occur primarily within the existing site of the WRPs and would not encroach on natural areas or areas with sensitive habitat. The San Jose Creek Water Reclamation Plant (SJCWRP) is one exception as it is located in proximity to riparian habitat within the San Gabriel River that supports least Bell's vireo (federally and state-listed endangered), yellow breasted chat and yellow warbler (state species of special concern), and western pond turtle (state species of special concern). The Whittier Narrows Recreation Area is also located immediately downstream of the SJCWRP and is listed as a Sensitive Ecological Area (SEA-42) containing extensive lowland riparian and freshwater marsh habitat supporting a rich and diverse flora and fauna.

Operationally, WRP effluent management would occur within area water courses, and the water courses support habitat that is important to biological resources. As provided in Chapter 6, the analysis of effluent discharge from the various WRPs indicates that there is variability of water levels in the San Gabriel River, San Jose Creek, and the Rio Hondo seasonally and from year to year. Records show that at times WRP discharges are a principal source of flow in the downstream portion of the San Gabriel River and the Rio Hondo, and intermittent WRP discharges constitute one of the principal sources of flow supporting riparian vegetation and species that are dependent upon riparian vegetation. However, it is not clear that reduction or cessation of WRP discharges would necessarily result in a substantial reduction in stream flow because base flows in San Jose Creek (derived from urban runoff and upwelling

groundwater) have been observed to overflow each of the series of grade-control weirs on the San Gabriel River even when no WRP discharge is occurring. Because substantive changes in flow would only result from a specific major reuse project, a project-level and cumulative analysis would be conducted at the time such a project is proposed. Thus, the incremental effect on biological resources as a result of the Clearwater Program and the impacts of past, present, and foreseeable future projects are considered less than cumulatively considerable.

Figure 21-1 identifies 128 projects in the vicinity of the project. Only a few of the 128 projects are in the vicinity of shaft sites where construction activity would occur, and these are in previously developed areas. In addition, none would result in alterations in hydrology that would alter freshwater habitat, singly or in combination with operation of the Clearwater Program. As a result, the Clearwater Program would not make a cumulatively considerable contribution to cumulative impacts on biological resources.

Alternative 1 through Alternative 4

Of the 128 projects identified on Figure 21-1, two are in the vicinity of the Clearwater Program: the Port of Los Angeles Southwest Marine Demolition Project is located in the vicinity of the Southwest Marine shaft site, and an office building project would be located in the vicinity of the JWPCP West shaft site. Because no significant biological resources were identified at the Southwest Marine shaft site, there would be no incremental effect if construction were to occur concurrently with the Port of Los Angeles Southwest Marine Demolition Project. If construction of the JWPCP West shaft site were to occur concurrently with the nearby office building, it could potentially increase local noise, which could have an impact on nesting birds. However, construction would occur within the context of the site, which is subject to continuous road noise from Interstate 110 to the west, Figueroa Street to the east, and Lomita Boulevard to the north. Considering the context of the site, the potential impact on nesting birds would be less than significant.

Furthermore, mitigation has been identified to reduce temporary impacts on biological resources during construction of the Clearwater Program to less than significant, and there would be no significant impacts during operations. Because impacts would be less than significant following mitigation, and would generally be distant from the 128 other projects listed in Figure 21-1 either in time or space, the incremental effect on cumulative impacts during construction and operation of Alternatives 1 through 4 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 4 would not result in cumulative impacts on biological resources under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternatives 5 and 6 do not include a project, and a new or modified ocean discharge system would not be constructed. Therefore, there would be a greater potential for emergency discharges of secondary effluent and/or sewer overflows into various water courses. An emergency discharge or sewer overflow has the potential to direct secondary treated and untreated wastewater flows into the Wilmington Drain and ultimately Machado Lake as discussed in Chapter 11 and Chapter 20. Wastewater contaminants could have impacts on individual organisms present during emergency discharges. Although plants and wildlife downstream of the discharge would potentially be exposed to treated or untreated wastewater, these discharges would be temporary, would be most likely during periods of high precipitation runoff, and would not likely alter the vegetative communities downstream. Due to the low frequency and short duration of emergency discharges, this impact would not be cumulatively considerable. The Dominguez Channel is a saltwater environment, and discharges to this waterway would not have an impact on terrestrial and freshwater biological resources. Therefore, operation of Alternative 5 under CEQA and Alternative 6 under NEPA would not result in cumulative impacts on biological resources.

21.2.4 Cultural Resources

21.2.4.1 Scope of Analysis

The geographic region of analysis for cumulative effects on cultural, archaeological, historical architectural, and paleontological resources related the Clearwater Program consists of the areas within the Los Angeles Basin, including at the Port of Los Angeles, the immediate vicinity of natural landforms along waterways and the coast, and in water where there may be submerged prehistoric remains or where there is evidence that historical maritime activity occurred. Thus, past, present, and reasonably foreseeable future development that would contribute to cumulative impacts on archaeological and paleontological resources under CEQA and NEPA includes projects that would have the potential for ground disturbance in this region of analysis. Those projects on land that have the potential to modify or demolish structures over 50 years of age have the potential under CEQA and NEPA to contribute to cumulative impacts on historical architectural resources. The study area was determined to be archaeological cultural resources and historical buildings within 0.5 mile of program and project elements.

21.2.4.2 Impacts of Past, Present, and Foreseeable Future Projects

The Los Angeles Basin is rich with cultural resources, from the prehistoric era and presence of the Gabrielino Native American tribe, through the growth of the city of Los Angeles in the 19th and 20th centuries. In addition, the remains of historic and modern vessels lie offshore on the Outer Continental Shelf in the shallow waters adjacent to the modern shoreline. This cumulative impact analysis focuses on three types of cultural resources: historical, archaeological, and paleontological. In determining impacts on the built environment, the study area for the program elements is limited to the WRP construction footprint and does not extend past the WRP property.

For the project, the study areas for archaeological impacts are the shaft site construction footprints, construction footprint for rehabilitation work at the existing outfalls, and riser/diffuser areas. There was only one instance of a historic district (Bethlehem Shipyard) within the study area that was proximate to a shaft site (Southwest Marine). For project impacts on archaeological resources, impacts at the shaft sites could be mitigated while archaeological resources were determined unlikely to be present at the tunnel depths. Because of the sensitivity of the region for paleontological resources and because these resources may be present at the tunnel boring depths, these resources could be individually and cumulatively impacted.

Alternative 1 Through Alternative 4

The surface-level younger alluvium in the Los Angeles Basin does not contain significant vertebrate fossils. However, the underlying Quaternary alluvium does contain significant paleontological resources and fossil deposits. Construction of the tunnel through subsurface sediments has the potential to destroy paleontological resources during tunnel boring, and there is no feasible mitigation to avoid or minimize these impacts. The incremental effect on cumulative impacts on unknown buried paleontological resources would be significant and unavoidable. Therefore, construction of Alternatives 1 through 4 could result in a potentially significant individual impact, but a less than cumulatively considerable contribution to cumulative impacts on paleontological resources under CEQA and NEPA.

There are no known archaeological resources within the project construction footprint, and archaeological resources were determined unlikely to be present at the tunnel depths. However, if unknown archaeological resources were encountered during construction at the WRPs, JWPCP, or shaft sites,

mitigation would reduce the incremental effect on cumulative impacts to less than significant. Because construction would not result in unmitigated destruction of archaeological resources, the contribution is not cumulatively considerable, and construction of Alternatives 1 through 4 would not result in cumulative impacts on archaeological resources under CEQA and NEPA.

A records search for historical resources near program and project elements revealed only three historic resources within proximity to a shaft site. These are the Bethlehem Shipyard near the Southwest Marine shaft site (Alternatives 1 and 2), and the Point Fermin Light House and a portion of the Upper Fort MacArthur Reservation near the Angels Gate shaft site (Alternative 3). Three shipwrecks are also within the vicinity of the existing ocean outfalls. However, the work on the outfalls would be limited to the area of potential effect, which is at most 23 feet wide (11.5 feet on either side of the largest outfall pipe), and construction activity is unlikely to affect any shipwrecks in the 20 to 50 feet of water where the new ballast rock is to be added. No buildings or structures more than 50 years of age within the CEQA study area would be affected by the Clearwater Program. Therefore, the contribution is not cumulatively considerable, and construction of Alternatives 1 through 4 would not result in cumulative impacts on historical resources under CEQA and NEPA.

As summarized, construction of the onshore and offshore tunnels for Alternatives 1 through 4 could destroy paleontological resources during tunnel boring, but would not result in cumulative impacts on cultural resources under CEQA and NEPA. Once operational, Alternatives 1 through 4 would have a less than significant incremental effect on cultural resources. Therefore, operation of Alternatives 1 through 4 would not result in cumulative cultural resource impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

Because Alternatives 5 and 6 do not include a project, a new or modified ocean discharge system would not be constructed and significant cumulative impacts on paleontological resources would not occur. Furthermore, as a consequence of taking no action, impacts on archaeological and historical resources would not occur. The incremental effect on cumulative cultural resource impacts during operation of Alternatives 5 and 6 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would not result in cumulative impacts on cultural resources.

21.2.5 Geology, Soils, and Mineral Resources

21.2.5.1 Scope of Analysis

The scope of analysis for the cumulative impacts of geology, soils, and seismicity varies depending on the geologic issue. Geologic hazards, such as soil failures, settlement, shrink/swell, expansive soils, erosion, and earthquake-induced liquefaction risks affect the construction footprint of the program or project site and the area immediately adjacent to the construction footprint because these impacts are site-specific and relate primarily to construction techniques. The scope of the analysis with respect to landslides and mudflows would be confined to the program and project sites. Therefore, the scope of analysis for the assessment of cumulative impacts associated with these risks is within the construction footprint and the area within immediate proximity. However, the study area for seismicity and faulting could affect a broader region; therefore, the study area for the assessment of cumulative impacts associated with these risks is the regional area (i.e., county of Los Angeles).

Past, present, planned, and foreseeable future development that would have the potential to contribute to cumulative impacts on geologic resources are those that involve the addition of new land area,

infrastructure, and personnel that would be subject to earthquakes. The projects listed in Figure 21-1 are located in a region subject to severe seismically induced ground shaking due to an earthquake on a local or regional fault. Structural damage and risk of injury as a result of such an earthquake are possible for most cumulative projects listed in Figure 21-1.

21.2.5.2 Impacts of Past, Present, and Foreseeable Future Projects

Past, present, and reasonably foreseeable future projects would not change the risk of seismic ground shaking. However, past development has increased the amount of infrastructure, structural improvements, and the number of people working in the county of Los Angeles. This past development has placed commercial, industrial, and residential structures and their occupants in areas that are susceptible to seismic ground shaking and fault rupture. Therefore, these developments have increased the potential for seismic ground shaking and fault rupture to damage people and property, and impacts related to seismic ground shaking and fault rupture would be cumulatively considerable in association with past, present, and reasonably foreseeable future projects.

The cumulative geographic scope for unstable soils, expansive soils, shrink/swell, settling, liquefaction, and erosion is the same as the program and project sites because the effects of these geologic conditions are site-specific and related primarily to construction techniques. Therefore, because only past, present, and reasonably foreseeable future projects located on the program and project sites would contribute along with the Clearwater Program to a cumulative impact in these impact areas, and no such projects are identified, impacts from past, present, and reasonably foreseeable future projects would not be cumulatively considerable for these geologic hazards.

Alternative 1 Through Alternative 4

Most of the geologic impacts associated with Alternatives 1 through 4 would occur during construction. Geologic impacts associated with soil conditions such as unstable soils, expansive soils, shrink/swell potential, seismically induced liquefaction, mudslides, and landslides of all alternatives would be confined to the program and project sites. Furthermore, project design features and mitigation measures presented in Chapter 8 would reduce any significant geologic impact regarding these types of soil conditions to less than significant. Additionally, the offshore tunnel for Alternatives 1 and 2 and the onshore tunnel for Alternatives 3 and 4 would cross known fault lines and be subject to fault rupture. Impacts associated with fault rupture during construction of the tunnels were determined to be less than significant due to the infrequent occurrence of fault rupture and the relatively short duration of construction. For these reasons, the incremental effect on cumulative geologic impacts during construction of Alternatives 1 through 4 would be less than significant after mitigation. Therefore, the contribution is not cumulatively considerable, and construction of Alternatives 1 through 4 would not result in cumulative geologic impacts under CEQA and NEPA.

Project design features and mitigation measures presented in Chapter 8 would also reduce any significant geologic impact regarding unstable soil conditions during operations to less than significant and, therefore, incremental geologic impacts related to soil conditions of Alternatives 1 through 4 would not be cumulatively considerable during operation. Once operational, there would be few aboveground structures that could be affected, and impacts would be mitigated by site-specific design recommendations. As discussed in Chapter 8, the offshore tunnel for Alternatives 1 and 2 and the onshore tunnel for Alternatives 3 and 4 would incorporate mitigation such as technical design features into the tunnels; these measures would prevent exposure of the onshore or offshore tunnel structure to potentially adverse effects involving the rupture of a known earthquake fault during operations, reducing damage of underground pipelines to less than significant. Although impacts associated with seismic

shaking and fault rupture are deemed to be cumulatively considerable for the study area, the incremental geologic impacts during operation of Alternatives 1 through 4 would be less than significant after mitigation. Therefore, the contribution is not cumulatively considerable, and operation of Alternatives 1 through 4 would not result in cumulative geologic impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternatives 5 and 6 do not include a project, and a new or modified ocean discharge system would not be constructed. Therefore, there would be a greater potential for emergency discharges of secondary effluent and/or sewer overflows into various water courses, including the Wilmington Drain. An emergency discharge during a wet-weather event would exceed the capacity of the Wilmington Drain. This exceedance could result in mudslides, ground failure, and unstable earth conditions in the unlined portions of the drain and possibly around Machado Lake. The Wilmington Drain and Machado Lake could be adversely modified during a wet-weather event and an emergency discharge. Therefore, impacts associated with these geologic resources would be significant and unavoidable. Present and future projects within the Wilmington Drain and Machado Lake could lessen the effect of an emergency discharge should it occur; however, the incremental effect on cumulative geologic impacts during operation of Alternatives 5 and 6 would be significant and unavoidable. Therefore, the contribution is cumulatively considerable, and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would result in cumulative impacts on geologic resources.

21.2.6 Greenhouse Gases

21.2.6.1 Scope of Analysis

The region of analysis for cumulative effects on GHG is the state of California. The SCAB experiences chronic exceedance of state and federal ambient air quality standards. Therefore, exceedances of established SCAQMD thresholds must be considered an adverse consequence. The SCAB is currently in nonattainment for ozone, PM_{10}, and $PM_{2.5}$. These pollutant nonattainment conditions within the region are deemed to be cumulatively considerable.

21.2.6.2 Impacts of Past, Present, and Foreseeable Future Projects

Some global warming predictions indicate the long-term impacts from increasing GHG levels in the atmosphere include sea level rise, changes to weather patterns, changes to local and regional ecosystems including the potential loss of species, and significant reductions in winter snow packs. These and other effects would have environmental, economic, and social consequences on a global scale.

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors (CEC 2006a). In California alone, carbon dioxide (CO_2) emissions totaled approximately 478 million metric tons in year 2003 (CEC 2006a), which was an estimated 6.4 percent of global CO_2 emissions from fossil fuels. Based on this information, past, current, and future global GHG emissions, including emissions from projects in the Ports of Los Angeles and Long Beach (Figure 21-1) and elsewhere in California, are cumulatively considerable.

Alternative 1 Through Alternative 4

The challenge in assessing the significance of an individual project's contribution to global GHG emissions and associated global climate change impacts is to determine whether a project's GHG

emissions, which are at a micro-scale relative to global emissions, result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact.

As presented in Chapter 9, proposed program and project construction and program operation would produce higher GHG emissions within California borders in each analysis year, compared to SCAQMD's GHG emission thresholds under CEQA. Any concurrent emissions-generating activity that occurs globally would add additional air emission burdens to these significant levels, which could further exacerbate environmental effects.

In accordance with Council on Environmental Quality (CEQ) guidance, the Corps does not utilize the SCAQMD's interim CEQA significance threshold, propose a new GHG standard, or make a NEPA impact determination for GHG emissions estimated to occur from the program, project, or any of the alternatives. Rather, in compliance with the NEPA-implementing regulations and CEQ guidance, the anticipated emissions for each alternative are disclosed relative to the NEPA baseline without making a significance impact determination. The CEQ reference point of 25,000 metric tons per year CO_2 equivalents (CEQ 2010) used in this analysis serves as an indicator that the federal action's anticipated GHG emissions warrant detailed consideration in a NEPA review, as presented in Chapter 9. The reference point does not constitute an indicator of a level of GHG emissions that may significantly affect the quality of the human environment, but rather a minimum standard for reporting emissions under the Clean Air Act.

Activities for Which No Potentially Significant Cumulative Impacts Would Result. When considering the effects of past, present, and reasonably foreseeable future projects in combination with the anticipated effects of the program and project elements, the following impacts are not deemed to be cumulatively considerable:

- Both the federal government and the state of California have adopted laws and policies directed at regulating and reducing GHG emissions, as presented in Chapter 9. The 2007 AQMP prepared by the SCAQMD for the purpose of bringing the SCAB into attainment with the federal ozone standard will also have the concurrent benefit of reducing GHG emissions. Consequently, program and project construction and program operations would be consistent with the applicable plan for reducing GHG emissions and would, therefore, not result in a cumulatively considerable contribution to cumulative GHG impacts due to a conflict with any plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Because the proposed elements would be less than significant following mitigation, they are not considered to have significant cumulative GHG impacts.

Activities for Which Potentially Significant Cumulative Impacts Would Result. When considering the effects of past, present, and reasonably foreseeable future projects in combination with the anticipated effects of the proposed program and project elements, the following impacts are deemed to be cumulatively considerable:

- Program and project construction activities would generate GHG emissions from construction equipment and mobile vehicles fuel exhaust, as discussed in Chapter 9. Program operation activities would generate GHG emissions from the increased combustion of digester gas, nitrification/denitrification at the SJCWRP, indirect electrical consumption at the WRPs, biosolids truck hauling from the JWPCP, and the emergency generator operation at the SJCWRP.

  The total contribution of GHG emissions from the proposed program and project (amortized construction plus operation at capacity) was compared to the baseline conditions. The

incremental emissions were then compared to SCAQMD's GHG emission thresholds and deemed to have an incremental GHG effect under CEQA prior to mitigation. Emissions would be reduced with the implementation of mitigation measures presented in Chapter 9, but would continue to have an incremental effect for GHG under CEQA. Any concurrent emissions-generating activity that occurs globally would add additional GHG emission burdens to these significant levels, which could further exacerbate environmental effects as discussed in this section and in Chapter 9.

The incremental effect on cumulative GHG impacts during construction and operation of Alternatives 1 through 4 would be significant and unavoidable. Therefore, the contribution is cumulatively considerable, and construction and operation of Alternatives 1 through 4 would result in cumulative GHG impacts under CEQA.

Alternative 5 and Alternative 6

Under Alternative 5, the No-Project Alternative, all program construction and operation elements, excluding process optimization at the WRPs, would occur. A new or modified ocean discharge system would not be constructed. Impacts from Alternative 5 would not result in incremental GHG effects under CEQA. Because the proposed elements would be less than significant, they are not deemed to be cumulatively considerable when viewed in connection with past, present, and probable future projects. Therefore, Alternative 5 would not make a cumulatively considerable contribution to cumulative GHG impacts.

Under Alternative 6, the No-Federal-Action Alternative, none of the project elements (i.e., onshore tunnel, shaft sites, rehabilitation of ocean outfalls, construction of riser and diffuser, etc.) would be constructed and the Sanitation Districts would continue to use the existing ocean outfalls. Therefore, the Corps would not make any significance determinations and would not issue any permits or discretionary approvals. As such, these elements would not be subject to NEPA. Although the program is not analyzed under Alternative 6, it is part of the cumulative scope of analysis because it is a foreseeable project. The combined effects from the No-Federal-Action Alternative and past, present, and foreseeable future projects would result in a cumulatively considerable contribution to cumulative GHG impacts. However, the No-Federal-Action Alternative would not contribute GHG emissions and, therefore, its incremental effect would not be cumulatively considerable.

21.2.7 Hazards and Hazardous Materials

21.2.7.1 Scope of Analysis

The scope of analysis for cumulative impacts associated with accidental spills, releases, or explosions of hazardous materials encompasses the area of the program and project sites and surrounding land uses. The impacts of a regional project diminish in magnitude with distance from the site because potential impacts associated with a hazardous material release, spill, or explosion diminish in magnitude with distance. Thus, past, present, and reasonably foreseeable future projects that could contribute to these cumulative impacts include those projects that transport hazardous materials in the vicinity of the program and project sites.

Past, present, planned, and foreseeable future development that would have the potential to contribute to cumulative impacts on hazards and hazardous materials are those that have involved, or would involve, the transport, storage, use, or handling of hazardous materials or are those that were or are currently located on designated hazardous materials sites.

21.2.7.2 Impacts of Past, Present, and Foreseeable Future Projects

Most of the past, present, and reasonably foreseeable future projects in the areas surrounding the program and project sites include industrial and commercial land uses that may use, handle, store, and/or transport hazardous materials. For example, the Port of Los Angeles is known to have many industrial land uses that handle hazardous materials and is known to have several contaminated sites. Furthermore, because the Port has industrial land uses, it has experienced and will likely continue to experience accidental releases or spills of hazardous materials in the future. However, past, present, and foreseeable future projects must comply with all existing hazardous material regulations in place through the local, state, and federal government. These regulations are in place to reduce the potential of accidental releases, spills, or explosions of hazardous materials and to minimize the environmental and public health impacts should one occur. Although projects cannot completely eliminate the probability associated with an accidental release, explosion, or spill, the existing regulations reduce the overall probability and minimize the impacts during a release. Therefore, past, present, and foreseeable future projects are not cumulatively considerable.

Alternative 1 Through Alternative 4

Some types of hazardous materials (e.g., diesel, oil, solvents, etc.) would be used during construction of Alternatives 1 through 4, and hazardous materials could be generated through the discovery of existing contaminated groundwater or soil. However, as discussed in Chapter 10, existing regulations would apply and would reduce the potential for an accidental release. Furthermore, if soil or groundwater contamination were discovered during construction of Alternatives 1 through 4, the contamination would be removed from the program or project site and would be treated and disposed of properly. Therefore, Alternatives 1 through 4 could result in an overall reduction of contamination that may be currently unknown and located in the soil and/or groundwater. Some additional hazardous materials would be used during operation of Alternatives 1 through 4 at the SJCWRP to disinfect the wastewater; however, as discussed in Chapter 10, use of these materials would be required to comply with existing regulations.

The incremental effect on cumulative hazards and hazardous materials impacts during construction and operation of Alternatives 1 through 4 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 4 would not result in cumulative hazards and hazardous materials impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

The project would not occur under Alternatives 5 and 6, and as a consequence of taking no action, impacts would be less than significant. Emergency discharges and/or sewer overflows into various water courses would be considered a violation of the JWPCP National Pollutant Discharge Elimination System (NPDES) permit and of the Clean Water Act but would not result in significant hazard to the public or environment. The incremental effect on cumulative hazards and hazardous materials impacts during operation of Alternative 5 would be less than significant. Therefore, the contribution is not cumulatively considerable, and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would not result in cumulative impacts associated with hazards and hazardous materials.

21.2.8 Hydrology, Water Quality, and Public Health

21.2.8.1 Scope of Analysis

The temporal scope for analysis of cumulative impacts on hydrology is the environmental baseline condition. Historic alteration of hydrologic processes has been so functionally and geographically

extensive that no surface water feature in the basin remains from historical time. The stream channels have been straightened, most are lined with concrete, and coastal shorelines have been altered by diking, dredging, and filling. Flow in all channels is controlled for flood hazard management, groundwater recharge, habitat maintenance, and other management objectives. Similarly, groundwater withdrawals have been extensive throughout the basin and existing groundwater supplies are largely maintained through engineered means including recharge at designated spreading grounds, injection pumping to establish saltwater intrusion barriers, and fully adjudicated groundwater extraction via wells. Accordingly, there is little remaining natural hydrology in the basin, apart from the Pacific Ocean itself, and surface and groundwater resources are fully managed in accordance with a complex set of existing laws, regulations, and policies.

The geographic scope for cumulative program impacts on hydrology includes the watersheds (Los Angeles River, San Gabriel River, and Dominguez Channel) and groundwater basins (San Gabriel Valley and Coastal Plain of Los Angeles) within which program elements would be located, as well as the adjacent coastal marine waters potentially affected by WRP discharges (the San Gabriel River Estuary) or stormwater discharges.

The geographic scope for cumulative project impacts on hydrology includes the watershed (Dominguez Channel, Machado Lake subwatershed) and groundwater basin (Coastal Plain of Los Angeles) within which project construction would occur, as well as the coastal marine waters potentially affected by construction of the riser and diffuser on the PV Shelf and the San Pedro Shelf (SP Shelf), and rehabilitation of the existing ocean outfalls.

The geographic scope with respect to tsunamis is the area of potential inundation due to a large tsunami, which could extend throughout the low-lying coastal areas of Los Angeles County. Past, present, and reasonably foreseeable future projects would not change the risk of tsunamis or seiches. However, past projects have resulted in the backfilling of natural drainages and creation of new low-lying land areas, which are subject to inundation by tsunamis or seiches in Los Angeles County.

21.2.8.2 Impacts of Past, Present, and Foreseeable Future Projects

Past, present, planned, and foreseeable future development that would have the potential to contribute to cumulative impacts on hydrology are those that have involved, or would involve, stormwater management, groundwater recharge or withdrawals, consumptive use of reclaimed water, effluent discharges, modifications of waterways, or in-water work. In addition, past development has increased the amount of infrastructure, structural improvements, and number of people working or living along the coast. This past development has placed structures and their occupants in areas that are susceptible to tsunamis and seiches. Thus, these developments have had the effect of increasing the potential for tsunamis and seiches to result in damage to people and property, and impacts would be cumulatively considerable associated with past, present, and reasonably foreseeable future projects.

Alternative 1 Through Alternative 4

Impacts on hydrology could arise via stormwater discharges during construction, or by altering flow or contaminant distributions in groundwater. As discussed in Chapter 11, impacts resulting from Alternatives 1 through 4 via these mechanisms would be less than significant.

Cumulative impacts on hydrology for Alternatives 1 through 4 were assessed by reference to the list of past, present, and reasonably foreseeable future projects contributing to cumulative impacts (Figure 21-1). The majority of these projects would have associated construction impacts with the potential to result in discharge of stormwater to surface waters, either directly or, more commonly, via a local stormwater

collection system. All or nearly all of these projects would disturb sufficient ground area to require preparation of a stormwater pollution prevention plan (SWPPP) and additional compliance with construction stormwater requirements of the local jurisdiction, including compliance with the general NPDES permit for construction stormwater discharges and in some cases with additional local regulations such as the Los Angeles County Municipal Separate Storm Sewer Systems permits. These regulatory constraints are intended to avoid significant construction-related impacts on water resources and are effective.

The projects shown in Figure 21-1 are not generally co-located with program and project elements. It is possible that conveyance construction projects could be located near some of the projects shown in Figure 21-1, but it is unlikely that these projects would also occur at the same time. If there were concurrent construction of Clearwater Program elements with other nearby projects, receiving waters could simultaneously be affected by stormwater discharge from more than one project. However, it is unlikely that such effects would arise as a result of simultaneous discharges from more than two projects, because only a few of the projects shown in Figure 21-1 are located near the construction sites of the alternatives, and compliance with regulations (e.g., SWPPP) would mitigate impacts. Thus stormwater effects resulting from construction of Alternatives 1 through 4 are unlikely to coincide in location with other projects generating construction stormwater, and there is a low potential for cumulative effects related to construction stormwater discharges.

Potential effects on groundwater flow and contaminant transport are detailed in Chapter 11, and the alternatives are shown to result in less than significant impacts. Projects 1–4, 6, 8–10, 12, 13, 17, 19, 21–24, 27–33, 45–70, 73, 74, 76, 78–81, 83, 90, 94, and 126, shown on Figure 21-1, are in the vicinity of proposed tunnels and/or shaft sites, and thus also have the potential to contribute to cumulative effects on groundwater. However, these projects are either located in marine areas or do not entail deep excavations that have the potential to affect groundwater movement. Accordingly, none of these projects in conjunction with Alternatives 1, 2, 3, or 4 has the potential to cause a cumulative effect on groundwater resources. Thus, there is a low potential for cumulative impacts on water resources as a consequence of altering flow or contaminant transport in groundwater.

Operation of program elements has the potential to contribute to cumulative hydrologic effects by affecting the production and use of reclaimed water or groundwater. However, none of the projects shown in Figure 21-1 have been identified as having the potential to substantially affect the production or use of reclaimed water or groundwater. Furthermore, operation of the program itself would have a less than significant impact on hydrologic resources; therefore, there is a low potential for operation of Alternatives 1 through 4 to contribute to cumulative impacts on groundwater.

Because the volume and temporal variability of discharges from the WRPs would not be changed substantially under the program, there is little potential for these changes to cause a regulatory standard to be violated. Similarly, existing discharge volumes from the WRPs constitute a minor component of discharges to the San Gabriel River Tidal Prism, which are dominated by discharges from the AES Alamitos and the Los Angeles Department of Water and Power (LADWP) Haynes electrical generating stations. These stations draw seawater for cooling purposes from Alamitos Bay and discharge the warmed seawater to the San Gabriel River. These stations have a combined maximum design cooling water flow of about 2,200 million gallons per day (MGD), enough volume to maintain a net outflow to the ocean except on extreme high tides. During a year-long biological survey in 2006, average flow rates for both facilities combined were approximately 1,400 MGD (MBC 2003:23). While these facilities may not be operated in this fashion in the near future, impacts from a cessation of ocean water cooling from these plants has been determined in other environmental documents to be less significant individually and cumulatively for water quality, sea turtles, eelgrass, Pacific groundfish, and coastal pelagics (LADWP

2010). Therefore, impacts on water quality would not make a cumulatively considerable contribution to cumulative hydrologic impacts.

As summarized, the incremental effect on cumulative hydrologic and water quality impacts during construction and operation of Alternatives 1 through 4 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 4 would not result in cumulative hydrologic impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternatives 5 and 6 do not include a project component. However, there is a significant cumulative impact associated with the emergency discharge of secondary effluent and/or a sewer overflow into various water courses. There would be cumulative effects related to siltation and erosion and water quality resulting from alteration of drainages during the emergency condition as well as the exceedance of the stormwater drainage system capacity and the exceedance of water quality parameters in areas such as Machado Lake and the Los Angeles Harbor, which are already impaired. The incremental effect on cumulative impacts would be significant and unavoidable. Therefore, the contribution is cumulatively considerable, and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would result in cumulative impacts on hydrology.

21.2.9 Land Use and Planning

21.2.9.1 Scope of Analysis

Because the alternatives have the capacity to affect the environment within the program and project sites and the surrounding communities, the region of analysis for cumulative impacts includes the program and project sites and extends to adjacent areas including the surrounding communities, which are assessed in terms of their compatibility with existing program and project uses.

21.2.9.2 Impacts of Past, Present, and Foreseeable Future Projects

Past and present actions within the vicinity of the program and project sites have been subject to the land use/density designations stipulated in the general plans of the individual communities in which the program and project elements would be located. Furthermore, regional plans affecting Southern California communities stipulate various policies and procedures associated with land use. These plans and all past development projects have been approved pursuant to the adopted general plans, zoning codes, and other plans, ensuring compliance with the various plans and programs. Over the years, the communities have developed in accordance with their governing plans, ensuring consistency with land use/density designations to minimize impacts on surrounding areas. On occasion, the various plans have required amendments in order to accommodate specific projects, ensuring ongoing consistency with planning programs. Similarly, existing facilities within the program and project vicinity, and construction and operation associated with past and current projects have been modified as necessary to ensure proposed land use/density designations are consistent with the governing plans and policies; the same is expected of reasonably foreseeable future projects. Therefore, past, present, and reasonably foreseeable future projects would not result in cumulatively considerable contribution to cumulative impacts related to land use designations and inconsistencies.

Alternative 1 Through Alternative 4

Alternatives 1 and 2 would not result in impacts on land use designations, nor would they result in inconsistencies with land use designations or federal, state, regional, or local plans; therefore, impacts

would not be cumulatively considerable. Alternatives 3 and 4 would result in a land use designation and plan inconsistency through the location of the Angels Gate shaft site and Royal Palms shaft site, respectively. However, this inconsistency would not result in cumulatively considerable impacts because 1) no other past, present, or reasonably foreseeable future projects would occur around these two locations that would result in a land use inconsistency and 2) a general plan amendment would be processed as required to reduce this project-specific impact to less than significant. The incremental effect on cumulative land use impacts during construction and operation of Alternatives 1 through 4 would be less than significant after mitigation. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 4 would not result in cumulative impacts on land use under CEQA and NEPA.

Alternative 5 and Alternative 6

The project would not occur under Alternatives 5 and 6, and as a consequence of taking no action, there would be no land use designation inconsistency or plan inconsistency. Therefore, the contribution is not cumulatively considerable, and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would not result in cumulative impacts on land use.

21.2.10 Marine Environment (Marine Hydrology, Water Quality, Biological Resources, Noise, and Public Health)

21.2.10.1 Scope of Analysis

The marine environment only applies to the project portion of all alternatives and does not apply to the program. The geographic region of analysis for biological resources differs by organism groups such as birds, fish, marine mammals, plankton, and benthic invertebrates. The mobility of species in these groups, their population distributions, and the normal movement range for individuals living in an area vary so that effects on biotic communities in one area can affect those communities in other nearby areas. For marine biological resources, excluding marine mammals, the geographic regions of analysis for benthic communities, water column communities (plankton and fish), and water-associated birds are the water areas around the riser and diffuser areas on the SP Shelf and PV Shelf, and the existing ocean outfalls. For marine mammals, the analysis area includes the Southern California Bight (SCB). The special-status bird species have differing population sizes and dynamics, distributional ranges, breeding locations, and life history characteristics. Because the bird species are not year-long residents but migrate to other areas where stresses unrelated to the project and other projects in the SCB area can occur, the area for cumulative analysis is limited to the Southern California coast between Royal Palms Beach and the Port of Long Beach and the alternative riser and diffuser areas. Sea turtles are expected to occur within proximity of the riser and diffuser areas and, therefore, the geographic region of analysis is within the SCB. Within the cumulative effects area, the California Department of Fish and Game has also identified critical habitat for black abalone near the existing outfalls on the PV Shelf.

Past and present projects operating within the SCB include oil platforms, fiber optic cables, wastewater outfalls, power point and other point source dischargers, stormwater and other nonpoint source discharges, and LA-2 and LA-3 (ocean dredge material disposal sites). In addition, the development of ports and marinas within the SCB, such as the Port of Los Angeles and the Port of Long Beach, and the increase in vessel traffic associated with port development would be considered past and present projects. Future projects would likely include liquefied natural gas projects within the SCB and any continuing development of the Port of Los Angeles and Port of Long Beach. Marine organisms could be affected by activities in the water such as dredging, filling, wharf demolition and construction, and vessel traffic. Runoff of pollutants from construction and operation activities on land reaching the SCB via storm drains

or sheet runoff also has the potential to affect marine biota, as does point source discharges such as ocean outfalls or power plants.

21.2.10.2 Impacts of Past, Present, and Foreseeable Future Projects

Construction of past, present, and reasonably foreseeable projects in the SCB involves in-water disturbances such as dredging and wharf construction that remove surface layers of soft bottom habitat as well as temporarily remove or permanently add hard substrate habitat (e.g., piles and rocky dikes). Furthermore, these activities generate turbidity as they disturb and suspend sediment in the water column. These disturbances alter the benthic habitats present at the location of the specific projects, but effects on benthic communities are localized and of short duration as invertebrates recolonize the affected habitats. Because these activities affect a small portion of the SCB at a time, and recovery has occurred or is in progress, biological communities in the SCB are not persistently subjected to construction and alteration. Therefore, past, present and reasonably foreseeable future projects would not result in cumulatively considerable impacts related to benthic habitats or water quality.

In-water construction activities, particularly pile driving, result in underwater sound pressure waves that could affect marine mammals. Marine mammals are expected to avoid areas where pile driving occurs, such as in the Los Angeles and Long Beach Harbors, marinas, or along the SCB coast, by moving to other areas; pile driving that occurs concurrently from more than one project would reduce the area available for marine mammals to avoid the disturbance. Overlapping construction activities often occur, especially within the Los Angeles and Long Beach Harbors, resulting in simultaneous pile driving in different areas. However, the area of sound impact on mammals is a maximum of 1.6 miles from the source of disturbance. The distance between the ports and the riser/diffuser area on the SP Shelf is approximately 9 miles. The distance between the ports and the PV Shelf is approximately 4 miles. Therefore, past, present and reasonably foreseeable future projects would not result in cumulatively considerable impacts related to pile driving.

Marine mammals migrate along the coast, and vessel traffic associated with the cumulative projects could interfere with their migration. However, because the area in which the marine mammals can migrate is large and the cargo vessels and cruise ships generally use designated travel lanes, the probability of interference with migrations is low, with the exception of vessel strikes. Historical data on whale strikes suggest that the vessel speed reduction would significantly reduce the potential for whale strikes because 80 percent of recorded strikes occurred with ships traveling faster than 12 knots. The Port of Los Angeles has implemented the Vessel Speed Reduction Program (VSRP), which lowers vessel speeds traveling to the port to 12 knots from Point Fermin, located 40 nautical miles from the port. Port records show there is currently over 90 percent participation in the VSRP, thereby reducing the potential for present and future increases in whale strikes due to vessels entering the Los Angeles and Long Beach Harbors. In addition, strikes can occur to sea turtles, dolphins, and other marine mammals. Operation of many of the past, present, and future projects would result in increased vessel trips to and from the Los Angeles and Long Beach Harbors; therefore, the related projects could potentially increase whale mortalities from vessel strikes, which is a cumulatively considerable impact.

Essential fish habitat (EFH) has been and would be lost due to past, present, and future landfill projects along the coast of the SCB and within the Los Angeles and Long Beach Harbors. EFH protection requirements began in 1996 and, therefore, only apply to projects since that time. The use of mitigation bank credits can offset the losses of EFH. Temporary disturbances within EFH also occur during in-water construction activities. These temporary disturbances, specifically within the Los Angeles and Long Beach Harbors, occur at locations that are scattered in space and time within the harbor. They would not likely reduce or permanently alter EFH within the Los Angeles and Long Beach Harbors and, therefore,

would not cause a significant cumulative impact on EFH. Construction and operation of ocean outfalls actually provide hard substrate within the coastal waters that contributes to EFH. Increased vessel traffic and runoff from on-land construction and operations resulting from the cumulative projects would not result in a loss of EFH nor would these activities cumulatively alter or reduce this habitat. Therefore, impacts from past, present, and reasonably foreseeable future projects would not be cumulatively considerable.

Dredging can adversely affect aquatic organisms present in sediments that are being removed if 1) toxic substances are present in sediments, 2) those sediments are suspended in the water column, displacing the organisms during dredge activities, or 3) the organisms are disposed of at a marine disposal site. Disposal of dredge spoils at designated ocean disposal sites LA-2 or LA-3 would be conducted only if the dredged material met the permitted volume and quality requirements for these sites. Dredge disposal at these sites was evaluated prior to approval of these sites and was determined to cause insignificant effects on the biological environment (EPA and Corps 2004). Therefore, impacts from past, present, and reasonably foreseeable future projects would not be cumulatively considerable.

Alternative 1 Through Alternative 4

Alternatives 1 through 3 involve the construction and operation of a riser and diffuser either on the SP Shelf or the PV Shelf and the rehabilitation of the existing ocean outfalls (see discussion of Alternative 4 for cumulative impacts associated with the rehabilitation). The construction impacts on benthic communities, water quality, and sediment quality would generally be localized around the riser and diffuser area on the SP Shelf or PV Shelf. The construction impacts associated with underwater sound, entanglement, and vessel collisions on marine mammals and turtles, other pelagic species such as fish, and EFH would occur in regions broader than the riser and diffuser area and would depend on the number of vessels used during construction and the period of construction and pile driving as described in Chapter 13. Furthermore, underwater sound and the use of vessels can affect the migration routes of certain species. These impacts would be considered significant prior to mitigation as discussed in Chapter 13; however, they would be reduced to less than significant with mitigation incorporated. These impacts would occur within the context of the larger SCB and Alternatives 1 through 3 would generally not be co-located with past, present, and reasonably foreseeable projects. As documented in Chapter 13, operation of Alternatives 1 through 3 would result in less than significant impacts on water quality, species habitat, and sediment quality. Because of these reasons, the incremental effect on cumulative impacts in the marine environment during construction (with mitigation) and operation of Alternatives 1 through 3 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 3 would not result in cumulative impacts on the marine environment under CEQA and NEPA.

Alternative 4 involves only the rehabilitation of the existing ocean outfalls and impacts on the marine environment would be far fewer than those identified for Alternatives 1 through 3. Specifically, there would be no noise impacts, fewer vessels required, and a lower probability of entanglement. It is possible that black abalone could be disturbed during the rehabilitation of the existing ocean outfalls; however, with the incorporation of mitigation, impacts would be less than significant. The incremental effect of rehabilitation of the existing ocean outfalls and their continued operation as currently exists would be less than significant with the mitigation incorporated. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternative 4 would not result in cumulative impacts on the marine environment under CEQA and NEPA.

Alternative 5 and Alternative 6

Under Alternatives 5 and 6, an emergency discharge into various water courses could occur. The water courses outlet into the Los Angeles and Long Beach Harbors. Discharges of secondary effluent and/or an overflow of untreated wastewater into the harbor waters could result in detrimental impacts on water quality and marine communities of the harbor. Complete flushing of the harbors is estimated at 90 tidal cycles, or 47 days. Although impacts associated with the introduction of secondary effluent or untreated wastewater into harbor waters would diminish with time prior to the full tidal exchange in the harbors, there is no feasible mitigation to reduce the significant impacts associated with an emergency release or overflow. The incremental effect on cumulative marine impacts during operation of Alternatives 5 and 6 would be significant and unavoidable. Therefore, the contribution is cumulatively considerable, and Alternative 5 under CEQA and Alternative 6 under NEPA would result in cumulative impacts on marine resources.

21.2.11 Noise and Vibrations (Terrestrial)

21.2.11.1 Scope of Analysis

The project area is located within Los Angeles County. Automobile, bus, and truck traffic are the major noise sources in the Joint Outfall System (JOS) service area. Industrial and commercial noise sources also contribute substantially to the ambient noise level in many areas. Freight loading from ships at the Port of Los Angeles is a major source of noise in the port and surrounding areas, including the communities of San Pedro and Wilmington.

Cumulative noise and vibration impacts on the marine environment are discussed in Section 21.2.10.

21.2.11.2 Impacts of Past, Present, and Foreseeable Future Projects

Virtually all of the cumulative projects in Figure 21-1 would include noise sources such as increased traffic, terminal operations, and neighborhood sources including parks and schools that would result in an increase in noise levels relative to the existing environment. Therefore, past, present, and foreseeable future projects would result in significant cumulative operational noise in the project area.

Alternative 1 Through Alternative 4

Alternatives 1 through 4 would result in significant temporary noise and vibrations impacts during program construction of plant expansion and process optimization at the SJCWRP. Project construction under Alternative 1 through Alternative 4 would also result in significant temporary increases in noise levels. Depending on alternative, significant impacts would occur in the vicinity of the JWPCP East, LAXT, Southwest Marine, Angels Gate, and Royal Palms shaft sites, and the onshore tunnel alignment along Figueroa and Gaffey to the PV Shelf, and Figueroa and Western to the PV Shelf. Noise from construction would be highly localized, intermittent, and would stop once construction is complete. In areas where significant impacts due to construction would occur, mitigation has been identified to reduce impacts to less than significant; therefore, the contribution is not cumulatively considerable, and construction of Alternatives 1 through 4 would not result in cumulative noise and vibration impacts under CEQA and NEPA.

Alternatives 1 through 4 would not result in significant impacts due to increases in noise during operation. Permanent noise sources such as plant expansion at the SJCWRP or biosolids management at the JWPCP are not predicted to result in a noticeable increase in noise levels. The onshore and offshore tunnels would not generate noise or vibrations during operations, and noise levels from operating shaft sites

would be well below standards established in local general plans or noise ordinances. The incremental effect on cumulative noise impacts during operation of Alternatives 1 through 4 would be less than significant. Therefore, the contribution is not cumulatively considerable, and operation of Alternatives 1 through 4 would not result in cumulative noise impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternatives 5 and 6 do not include a project, and no cumulative project-level noise and vibration impacts would occur as a result of emergency discharges into various water courses. The incremental effect on cumulative noise impacts during operation of Alternatives 5 and 6 would be less than significant. Therefore, the contribution is not cumulatively considerable, and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would not result in cumulative impacts on noise and vibrations.

21.2.12 Employment, Housing, Socioeconomics, and Environmental Justice

21.2.12.1 Scope of Analysis

The program and project elements under the alternatives have the capacity to affect the employment, housing, and socioeconomic conditions mainly in areas surrounding the program and project sites. However, in addition to the past, present, and future projects and the surrounding communities, the region of analysis for cumulative impacts includes the program and project sites and extends to the entire Los Angeles County reflecting the JOS service area, which is located within Los Angeles County.

21.2.12.2 Impacts of Past, Present, and Foreseeable Future Projects

Past projects within the Port of Los Angeles and the communities of Carson, Wilmington, San Pedro, and Rancho Palos Verdes have induced substantial population growth through the development of single- and multiple-family dwelling units as well as through the creation of a large employment base, particularly dependent upon and related to operations at the port. Although this growth has been accommodated through careful planning by local and regional authorities, environmental impacts have resulted.

Nearly all of the proposed present and future projects listed in Figure 21-1 would enhance the construction employment opportunities in Carson, Wilmington, San Pedro, and Rancho Palos Verdes, and possibly within the greater Los Angeles area.

However, cumulative impacts associated with past, present and reasonably foreseeable future projects regarding population and housing resources would not be cumulatively significant. Within the Port of Los Angeles and the surrounding communities, there has been a large amount of past industrial, commercial, and housing development. Present and future industrial and commercial projects planned for the port and surrounding area have significantly slowed down, contributing to one of the nation's highest unemployment rates. The project area is built out, and opportunities for large-scale housing developments are gone. Shipping through the port complex has also been down, mirroring the economic downturn of the past few years. Large infrastructure projects hold some promise for construction employment, but these projects are also significantly fewer than in the past or have taken longer to build based on a slow-down in state, federal, and local funding sources. Therefore, these developments have increased the potential for employment, housing, socioeconomics, and environmental justice impacts related to growth in the project area and would be cumulatively considerable associated with past, present, and reasonably foreseeable future projects.

Alternative 1 Through Alternative 4

Many of the current and foreseeable activities under the program and project involve construction or maintenance. These activities would increase the number of jobs in the construction industry. However, the effects of the additional construction jobs would be temporary and would last only in terms of the construction. Also, individual construction workers may be able to work on multiple construction projects within Los Angeles County. The incremental effect of construction employment from the construction activities under each alternative would be minimal given the estimated number of jobs that would be created as a result of the Clearwater Program and the number of jobs in the county. Additionally, the construction jobs created from the Clearwater Program are within regional and city employment projections. Therefore, approval of the proposed project would not induce substantial employment growth within the city or county. Other projects proposed in the area also have the potential to increase employment. However, through use of land use plans applicable to the project area and the Southern California Association of Government's regional plan, future growth is anticipated and planned. In addition, environmental documents prepared for the approved local land use plans and regional plans address the significant cumulative effects of future development and identify ways to mitigate those effects. The proposed project is consistent with local and regional land use plans. There is only one environmental justice impact at the JWPCP East shaft site under Alternatives 1 and 2, but in combination with other projects in the area, which are small (Projects 78, 79, 90, and 94), there would be no cumulatively considerable impacts related to low-income minority communities, employment, or population and housing for Alternatives 1 through 4.

As summarized, although impacts associated with employment, housing, and socioeconomics are deemed to be cumulatively considerable for the study area, the incremental effect on cumulative impacts during construction and operation of Alternatives 1 through 4 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 4 would not result in cumulative impacts on employment, housing, and socioeconomics under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternatives 5 and 6 do not include a project, and a new or modified ocean discharge system would not be constructed. Therefore, there would be a greater potential for emergency discharges of secondary effluent and/or sewer overflows into various water courses. This could result in significant and unavoidable impacts on water quality and recreation for the Los Angeles Harbor and neighboring beaches. Because these are regional resources, impacts would not result in disproportionately high and adverse effects on minority and low-income populations. The incremental effect on cumulative impacts on employment, housing, socioeconomics, and environmental justice during operation of Alternatives 5 and 6 would be less than significant. Therefore, the contribution is not cumulatively considerable, and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would not result in cumulative impacts on employment, housing, socioeconomics, and environmental justice.

21.2.13 Public Services

21.2.13.1 Scope of Analysis

The geographic scope for cumulative construction impacts on public services is Los Angeles County and the cities of Los Angeles, Long Beach, Carson, and Pomona, specifically near areas where construction would occur. The resulting area for public services construction impact analysis generally encompasses the program and project area and the service areas for the primary and secondary responding units for

each service provider. The specific fire and police service providers are discussed in more detail in Chapter 16.

The geographic scope for cumulative operational impacts on public services is the county of Los Angeles because this would be the service area for the program and project.

21.2.13.2 Impacts of Past, Present, and Foreseeable Future Projects

Past, present, and foreseeable future development that would have the potential to contribute to cumulative impacts on public services are those that have involved, or would involve, construction and maintenance activities in roadways or public right-of-ways that are used by fire, police, and emergency response service providers as well as evacuation routes.

Many of the present and reasonably foreseeable future cumulative projects in Figure 21-1 involve construction of schools, apartments, homes, condominiums, warehousing, commercial, retail, and mixed-use development. Construction of these projects could impair the implementation of or physically interfere with an existing emergency response or emergency preparedness plan, or require the preparation of a new emergency response or preparedness plan. However, these projects would be required to coordinate with all law enforcement agencies during construction of all roadway improvements to establish emergency vehicular access, ensuring continuous law enforcement access to surrounding areas. Furthermore, police and fire stations are generally distributed to facilitate quick emergency response throughout the program and project area. Therefore, past, present, and reasonably foreseeable future projects would not result in a cumulatively considerable impact on the implementation of any emergency response, preparedness, or evacuation plan, nor would they require the preparation of a new emergency response or preparedness plan.

Alternative 1 Through Alternative 4

Alternatives 1 through 4 would result in less than significant cumulative impacts on public services. According to the returned service provider questionnaires (Appendix 16-A), only a few of the emergency response providers in the project area have plans for future construction of fire or police stations. The Los Angeles County Fire Department has been working with the city of Carson to address the need for an additional fire station on the west side of the city in the vicinity of Del Amo Boulevard and Main Street. This is within approximately 2 miles of the JWPCP. Furthermore, the Los Angeles County Fire Department's current 5-year facility plan has identified 20 new fire stations, all of which are planned to be built in the urban expansion areas of the county, which include Malibu, the Santa Monica Mountains, Santa Clarita, and the Antelope Valley. However, these areas are not near the WRPs or project areas and would not provide services to the project or cumulative projects. Also, actual station development is contingent upon, among other things, the pace of development in the vicinity of the planned station and the availability of sufficient funding for station development and ongoing staffing cost. The Los Angeles County Sherriff's Department Carson Station is schedule to be remodeled; however, there are no plans for construction of a new station. The Pomona Police Department is planning a possible new facility across the street from the main station. Finally, the Los Angeles Port Police completed a new Port Police headquarters, in November 2011, which located on the corner 5th Street and Center Street in San Pedro. The Long Beach Fire Department, Long Beach Police Department, and Los Angeles Fire Department do not have any plans to construct future stations in the project area. Although the Los Angeles Police Department did not provide a response to the questionnaire, an internet search was performed and did not reveal any plans for new stations in the South Bureau in the vicinity of the project.

Alternatives 1 through 4 construction activities would be contained within the boundaries of the various sites and would not result in additional permanent employees or changes in access at the various sites. Although project elements vary between Alternatives 1 through 4, all construction would take place within the boundaries of the shaft sites and underground tunnel alignments. As discussed in Chapter 16, Alternatives 1 through 4 would not substantially impair the implementation of or physically interfere with an existing emergency response or emergency preparedness plan, or require the preparation of a new emergency response or preparedness plan. All construction crews would be specifically trained to work within tunnels and would have standard operating procedures in case of a tunneling construction-related emergency. The Sanitation Districts' contractor would prepare and comply with the Confined Space Entry Program, as required by Title 29 of the CFR, addressing all potential physical and environmental hazards and containing procedures for safe entry into confined spaces. Contractors would also be required to operate and maintain their own safety equipment. Furthermore, the Sanitation Districts' contractor would adhere to all emergency response and evacuation regulations, ensuring compliance with existing emergency response plans.

As discussed in Chapter 16, operation of Alternatives 1 through 4 would be the same as the baseline conditions and would not interfere with the implementation of any emergency response, preparedness, or evacuation plan nor would it require the preparation of a new emergency response or preparedness plan.

The incremental effect on cumulative impacts during construction and operation of Alternatives 1 through 4 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 4 would not result in cumulative impacts on public services under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternatives 5 and 6 do not include any project elements and, as a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses. This would be a temporary occurrence, and the Sanitation Districts would take immediate action to correct the situation. Therefore, it is not expected that any existing emergency response or emergency preparedness plan or emergency evacuation plan would be impaired. Therefore, the contribution is not cumulatively considerable, and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would not result in cumulative impacts on public services.

21.2.14 Recreation

21.2.14.1 Scope of Analysis

The geographic scope for cumulative construction impacts on recreation is Los Angeles County and the cities of Los Angeles, Long Beach, and Pomona, specifically near areas where construction would occur. The geographic scope for cumulative operational impacts on recreation resources is the county and city of Los Angeles because these would be the service areas for the program and project, respectively.

21.2.14.2 Impacts of Past, Present, and Foreseeable Future Projects

Past, present, and foreseeable future development that would have the potential to contribute to cumulative impacts on recreation resources are those that have involved, or would involve, construction of or modifications to existing recreation resources, or construction of new recreation resources, in the general vicinity of the Clearwater Program.

Existing and proposed projects in the vicinity of the program and project area that would provide new open space and recreation resources for the public include the San Pedro Waterfront Enhancements Project (Project 22), Wilmington Waterfront Master Plan (Avalon Boulevard Corridor Project) (Project 26), Pacific Corridors Redevelopment Project (Project 47), Cabrillo Marine Aquarium Expansion (Project 48), East Wilmington Greenbelt Community Center (Project 71), and Queensway Bay Master Plan (Project 125). The addition of these projects would result in a significant increase in recreational opportunities in the area, and may benefit existing recreational resources in the vicinity of the program and project area by reducing the number of visitors to those recreational resources.

Construction activities that would affect on-land recreational opportunities within the vicinity of the program and project area include construction of schools, apartments, homes, condominiums, warehousing, and commercial, retail and mixed-use development. These activities could temporarily remove or degrade existing on-land recreational opportunities as well as increase the use of existing neighborhood and regional parks or other recreational facilities in the vicinity of the program and project area, but the impact would be short-term and not cumulatively considerable.

Alternative 1 Through Alternative 4

Alternatives 1 through 4 would result in less than significant cumulative impacts on recreation resources. There are a number of present and reasonably foreseeable future projects that would result in intensification of residential uses and, therefore, may increase population in the vicinity of the program and project area. These projects are growth-inducing, and their cumulative effect would likely result in intensification of use of existing recreational resources in the vicinity of the study area. However, these residential projects would be evaluated under a separate environmental process and would be required to comply with existing local and state regulations mandating recreational facilities that would specifically support these new projects.

Alternatives 1 through 4 at the project level would involve shaft site development and tunneling activities. These activities would remove or degrade existing on-land recreational opportunities within the vicinity of the program and project area for the duration of construction. Although construction activities would result in the temporary closure of portions of some recreation resources, it is expected that patrons would still utilize the sections that would remain in operation, as well as other recreational facilities including community centers, sports facilities, school playfields, swimming facilities, and fitness and senior centers in the surrounding vicinity. Construction activities would also expose patrons to excess noise levels at various recreation resource locations; however, these impacts would be temporary, minimized by noise barriers, and, in some cases, below or masked by the baseline noise levels, and would not significantly reduce recreational enjoyment of recreation resources. Additionally, construction activities would increase the amount of daily truck trips and limit the amount of parking at the Angels Gate and Royal Palms shaft sites; however, as discussed in Chapters 17 and 18, the carrying capacity and available onsite and on-street parking of the surrounding roadways can safely accommodate the addition of project-related construction truck trips and parking needs without significantly increasing congestion and limiting access. In the event that patrons do visit other facilities due to project construction activities, it is not expected that patrons would use facilities in a manner that would cause or accelerate substantial physical deterioration of those facilities. It is expected that the demand for alternative recreation resources would be distributed among the large number of parks and recreational facilities in the area and region, and would likely return to original recreation resources once construction activities cease.

Although construction of Alternatives 1 through 4 would result in a temporary loss or diminished quality of on-land recreational opportunities, these impacts would last during the construction period only and would return to levels comparable to that which existed prior to construction once construction is

complete. Mitigation such as noise barriers and noise-reducing construction practices would reduce diminishment of the recreational experience. Therefore, the incremental effect on cumulative recreation impacts during construction of Alternatives 1 through 4 would be less than significant after mitigation. Furthermore, operation of Alternatives 1 through 4 would not result in a significant impact on on-land recreational opportunities within the vicinity of the program and project area. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 4 would not result in cumulative recreation impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternatives 5 and 6 would result in less than significant cumulative impacts on on-land recreation resources. Because Alternatives 5 and 6 do not include a project, a new or modified ocean discharge system would not be constructed. Therefore, there would be a greater potential for emergency discharges into the various water courses, such as the Wilmington Drain, which conveys flows to Machado Lake (also known as Harbor Lake) and ultimately to the Los Angeles Harbor. However, an emergency release entering Machado Lake would not substantially change the existing recreational conditions of the lake. Currently, swimming and boating are not allowed, and would likely not be allowed under either alternative. Although sport fishing is a permitted activity, officials recommend against eating any fish caught at Machado Lake. Recreational impacts resulting from emergency discharges of secondary treated effluent entering Machado Lake would be less than significant. Although operation of Alternatives 5 and 6 would result in diminished quality of recreational opportunities at Machado Lake, impacts would not cause significant impacts and would not be cumulatively considerable.

The Wilmington Drain has the capacity to handle a discharge from the JWPCP during normal flow or dry-weather flow events. However, during a storm event, the combined storm flow and discharge from the JWPCP could exceed the capacity of the Wilmington Drain. If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the JWPCP could overflow and untreated wastewater could enter various water courses, such as the Dominguez Channel and the Los Angeles River. Both the Dominguez Channel and the Los Angeles River discharge into the Los Angeles Harbor. Current recreational uses, including boating throughout the entire harbor and fishing around Cabrillo Beach and Cabrillo Pier, would be affected by a decrease in water quality as discussed in Chapters 11 and 13. The discharge of untreated wastewater into the Los Angeles Harbor would result in a significant impact on these recreational uses.

It is unlikely that an emergency discharge into the Wilmington Drain or a sewer overflow would be captured and treated subsequently. Therefore, the impact on water-related recreational resources around the Los Angeles Harbor would be significant and unavoidable. Although this would be a temporary impact for recreation resources because complete flushing of the harbor would occur in approximately 47 days (Maloney and Chan 1974:5–6), the incremental effect on cumulative impacts would be significant and unavoidable. Therefore, the contribution is cumulatively considerable, and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would result in cumulative impacts on recreation.

21.2.15 Transportation and Traffic (Terrestrial)

21.2.15.1 Scope of Analysis

A description of past, present, and future transportation and traffic conditions is presented in Chapter 18. The transportation and traffic impact analysis presented in Chapter 18 assesses potential impacts against cumulative conditions at the peak of construction activities for the alternatives that were analyzed. Future traffic growth was projected by increasing existing traffic volumes using Congestion Management

Program for Los Angeles County-derived estimates of annual growth in the area and by adding traffic that would be generated by known pending development projects in the area. This approach to estimating future traffic volumes approximates traffic growth from development that is expected to occur under the general plan and other jurisdictional plans and growth projections. Consequently, the construction-period traffic analysis presented in Chapter 18 is a cumulative evaluation.

21.2.15.2 Impacts of Past, Present, and Foreseeable Future Projects

Potential cumulative construction effects from other past, present, and reasonably foreseeable future projects on roadway operations in the study area include the following:

- Temporary increases in traffic associated with construction worker commutes, delivery of construction materials, hauling of demolished and/or excavated materials, and general deliveries would increase travel demand on roadways.
- Temporary roadway lane closures or narrowings in areas directly abutting construction activities would reduce capacity of roadways.
- Temporary roadway closures associated with the construction of transportation infrastructure would reduce the capacity of the roadway system and/or require detours that increase travel times.
- Temporary lane or road closures could require route detours or reduced service for transit routes that run adjacent to construction activities.
- Reduced roadway capacity and an increase in construction-related congestion could result in temporary localized increases in traffic congestion that exceed applicable level of service standards.
- Construction activities could disrupt existing transit service in the proposed project vicinity. Impacts may include temporary route detours, reduced or no service to certain destinations, or service delays.
- During project construction, parking demand would increase from construction workers and from construction equipment that is not in use. In addition, parking spaces located adjacent to construction activities could be temporarily closed.
- Temporary sidewalk, lane, or roadway closures could occur adjacent to project elements that are under construction, which could interfere with bicycle or pedestrian traffic.

Without mitigation, the cumulative impact on transportation, due to construction-generated traffic and other construction activities, is considered significant during construction under CEQA and NEPA.

Operation of the proposed alternatives, in conjunction with traffic from other projects and general traffic growth, would have minimal traffic impacts. All traffic analysis completed for this EIR/EIS represent cumulative conditions.

Alternative 1 Through Alternative 4

Alternatives 1 through 4 would result in significant temporary transportation impacts during program construction of plant expansion at the SJCWRP; process optimization at the SJCWRP, Pomona Water Reclamation Plant, Los Coyotes Water Reclamation Plant , and Long Beach Water Reclamation Plant; and solids processing facilities at the JWPCP. Mitigation has been identified to reduce impacts for Alternatives 1 through 4 to less than significant. The contribution of Alternative 1 through Alternative 4 to cumulative transportation and traffic impacts would not be cumulatively considerable after mitigation.

No other significant cumulative impacts would occur under Alternative 1 through Alternative 4 during construction, and no additional mitigation measures would be necessary to address cumulative program or project construction impacts. In addition, the Sanitation Districts incorporate many standard practices and requirements into publicly bid construction contracts to minimize any traffic impacts during construction and follow local agency permitting requirements. These standard practices and bid requirements include preparation of a traffic management/traffic control plan, providing advance notice to affected parties, coordination with emergency service and public transportation providers, and identifying alternate pedestrian and bicycle access routes, where applicable. The traffic management plans will consider on-going construction and operational activities associated with other development or infrastructure projects in the immediate area. These practices, in combination with implementation of mitigation, would ensure that construction-related traffic and transportation impacts do not represent a significant contribution to cumulative traffic impacts.

Alternatives 1 through 4 would not result in significant impacts due to increases in traffic during operation, and all new facilities would be located below ground or within the existing plants. Operation of these alternatives would not significantly affect safety, emergency access, or non-motorized transportation facilities. Therefore, operation of Alternatives 1 through 4 would not make a significant contribution to cumulative transportation and traffic impacts.

As summarized, the incremental effect on cumulative transportation (terrestrial) impacts during construction (after mitigation) and operation of Alternatives 1 through 4 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 4 would not result in cumulative transportation and traffic impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternative 5 is the No-Project Alternative, as required by CEQA. Alternative 5 would result in significant temporary transportation impacts during program construction of plant expansion at the SJCWRP and solids processing facilities at the JWPCP; however, Alternative 5 would be subject to mitigation in accordance with the EIR prepared for the 2010 Plan (Jones & Stokes 1994), which would reduce transportation impacts to less than significant. Alternative 5 does not include a project, and no cumulative project-level terrestrial transportation and traffic impacts would occur as a result of emergency discharges into various water courses. Furthermore, little if any additional traffic is anticipated under Alternative 5 during operations. Therefore, Alternative 5 would have a less than significant cumulative impact on the surrounding transportation system, and no changes to the existing roadway network, public rights-of-way, emergency access, or bicycle or pedestrian facilities or public transit stops accessible to the public would occur.

Alternative 6 is the No-Federal-Action Alternative, as required by NEPA. The cumulative impact analysis for Alternative 6 (Project) is the same as described for Alternative 5 (Project), and there would be no cumulative project-level impacts. Therefore, there would be no contribution from Alternative 6 to cumulative traffic and transportation impacts under NEPA.

As summarized, the incremental effect on cumulative traffic and transportation impacts during construction and operation of Alternatives 1 through 4 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternative 5 under CEQA and operation of Alternative 6 under NEPA would not result in cumulative impacts on transportation and traffic (terrestrial).

21.2.16 Transportation and Traffic (Marine)

21.2.16.1 Scope of Analysis

The program does not include marine elements and, therefore, is not discussed in this cumulative analysis. The project elements would increase the number of vessels within the Port of Los Angeles, Main Channel, West Basin, Fish Harbor, and precautionary areas. It would also increase vessel traffic in the area surrounding the existing ocean outfalls, as well as in the marine vessel traffic lanes extending from the port to potential ocean disposal sites. Like all commercial vessels, these ships would follow designated traffic channels (also used by other vessels) when approaching and leaving the Port of Los Angeles/Long Beach complex. Marine-based construction activities include dredging near the riser and diffuser areas; transport of offshore tunnel excavated material from the LAXT shaft site and dredged material from the riser and diffuser areas to an Ocean Dredged Material Disposal Site; transport of the riser and diffuser; transport of workers from the Port of Los Angeles to the riser and diffuser construction locations; construction of the riser and diffuser; and rehabilitation of the existing ocean outfalls. Operational activities include marine traffic generated by maintenance of the riser and diffuser on the SP Shelf. Because the project elements have the capacity to affect vessel transportation within these port channels and surrounding vessel traffic lanes, the region of analysis for cumulative marine transportation impacts includes the vessel traffic channels that ships use to access berths within the Port of Los Angeles, Main Channel, West Basin, Fish Harbor, precautionary areas, and surrounding vessel traffic lanes.

The cumulative impacts include those impacts from past, present, and reasonably foreseeable future projects that will also increase the number and size of vessels using these shipping lanes, as well as increased use of the port areas.

21.2.16.2 Impacts of Past, Present, and Foreseeable Future Projects

Past actions within the project vicinity have resulted in deepening navigation channels and upgrading existing wharf infrastructure to accommodate modern container ships. Incremental port development has resulted in water-dependent developments that have been necessary to accommodate the needs of foreign and domestic waterborne commerce. In response to past actions, several measures have been implemented to ensure the safety of vessel navigation in the harbor area. Restricted navigation areas and routes have been designated to ensure safe vessel navigation, and are regulated by various agencies and organizations to ensure navigational safety.

Present and reasonably foreseeable port projects, including the Clearwater Program, could result in marine vessel safety impacts if they introduce construction equipment to the harbor, Main Channel, and/or precautionary areas; and/or interfere with United States Coast Guard (USCG) -designated vessel traffic lanes. In-water construction activities are in concurrence with many of the port projects shown in Figure 21-1. These projects include the Pier 400 Container Terminal and Transportation Corridor (Project 1), Berths 136-147 Terminal (Project 2), Channel Deepening (Project 4), Cabrillo Way Marina, Phase II (Project 5), San Pedro Breakwater Artificial Reef (Project 6), Berth 226–236 (Evergreen) Container Terminal Improvements (Project 8), SSA Outer Harbor Fruit Facility Relocation (Project 10), Westway Decommissioning (Project 14), Berths 97–109 China Shipping Development (Project 16), Berths 171–181 Pasha Marine Terminal Improvements (Project 17), San Pedro Waterfront (Project 22), Berth 302–305 (APL) Container Terminal Improvements (Project 24), Wilmington Waterfront Master Plan (Avalon Boulevard Corridor Project) (Project 25), Berths 212–224 (YTI) Container Terminal Improvements (Project 29), and the Berths 121–131 (Yang Ming) Container Terminal Improvements (Project 30). Construction activities would introduce construction equipment into the Main Channel. The

port utilizes standard safety precautions in piloting these vessels through harbor waters and standard measures including compliance with the Los Angeles Harbor Department (LAHD) standards for construction and dredging safety. Corps permit requirements would also apply.

Proposed improvements associated with other projects would improve the overall conditions in the port by creating berth depths sized to accommodate the modern, deeper-draft class of vessels. The deeper draft berths would improve the efficiencies of shipping and port operations by reducing the relative number of vessels and vessel trips required to accommodate projected container throughput at the port. While overall vessel traffic would increase from past, present, and foreseeable future projects, this increase would not create significant cumulative impacts.

Alternative 1 Through Alternative 4

Alternatives 1 through 4 would result in less than significant cumulative impacts on marine transportation and traffic. As discussed in Chapter 19, vessel traffic levels are highly regulated by the USCG Captain of the Port (COTP) and the Marine Exchange of Southern California via the Vessel Traffic Service (VTS) to ensure the total number of vessels transiting the port does not exceed the design capacity of the federal channel limits. Mariners are required to report their position to the COTP and the VTS prior to transiting through the port; the VTS monitors the positions of all inbound/outbound vessels within the precautionary area and the approach corridor traffic lanes. In the event that scheduling conflicts occur and/or vessel occupancy within the port is operating at capacity, vessels are required to anchor at the anchorages outside the breakwater until mariners receive COTP authorization to initiate transit into the port.

The construction phase of Alternatives 1 through 4 would involve the use of construction vessels and equipment to conduct riser assembly, installation, and maintenance. These vessels would transport all necessary supplies and construction crew within the port, precautionary areas, and surrounding vessel traffic lanes. Alternatives 1 through 4 would slightly increase marine traffic due to these activities. The cumulative increase in port vessel volume, in combination with increased recreational and cargo volume (i.e., containers and twenty-foot equivalent units) from other reasonably foreseeable future port projects would result in additional vessel traffic within the harbor, Main Channel, precautionary areas, and surrounding marine vessel traffic lanes. The increased vessel volumes would in turn increase the risk of in-water vessel traffic hazards. However, these types of activities are routinely conducted in the port, and contractors performing in-water construction activities are subject to applicable rules and regulations stipulated in all LAHD contracts. The port would utilize standard safety precautions, as well as other applicable compliance standards (e.g., the LAHD standards for construction and dredging safety), in piloting these vessels through harbor waters. Furthermore, vessels that would be utilized in project construction activities outside the port boundaries would adhere to all safety protocols, including USCG regulations, speed limit regulations, traffic separation schemes, limited visibility guidelines, and VTS monitoring requirements. Therefore, the short-term presence of supply barges/support boats in the harbor, Main Channel, West Basin, Fish Harbor, precautionary areas, and area surrounding the existing ocean outfalls, as well as marine vessel traffic lanes from the port to potential ocean disposal sites, would not reduce the existing level of safety for vessel navigation in and surrounding the port. These practices and procedures ensure safe transit of vessels operating within, as well as to and from, the project area. Given the continued use of standard practices and implementation of COTP uniform procedures, the projected cumulative increase in construction-related vessel calls would not significantly decrease the margin of safety for marine vessels or interfere with the operation of designated vessel traffic lanes entering and exiting the port within the cumulative area impacted by Alternatives 1 through 4. Therefore, construction of Alternatives 1 through 4, considered together with other present and reasonably foreseeable future projects, would result in less than significant cumulative impacts.

During operation, Alternatives 1 through 4 would slightly increase marine traffic due to vessel trips generated by maintenance of the riser and diffuser on the SP Shelf. The cumulative increase in port vessel volume, in combination with increased recreational and cargo volume (i.e., containers and twenty-foot equivalent units) from other reasonably foreseeable future port projects would result in additional vessel traffic within the harbor, Main Channel, precautionary areas, and surrounding marine vessel traffic lanes. The increased vessel volumes would in turn increase the risk of in-water vessel traffic hazards. However, as discussed in Chapter 19, the rate of vessel accidents (i.e., collisions, collisions with stationary objects or structures, and groundings) in the port is relatively low compared to vessel traffic volumes within the port. Standard practices and procedures ensure safe transit of vessels operating within, as well as to and from, the project area. Given the continued use of standard practices and implementation of COTP uniform procedures, the projected cumulative increase in vessel calls would not significantly decrease the margin of safety for marine vessels or interfere with the operation of designated vessel traffic lanes entering and exiting the port within the cumulative area impacted by Alternatives 1 through 4. Therefore, operations of Alternatives 1 through 4, considered together with other present and reasonably foreseeable future projects, would result in a less than significant contribution to cumulative impacts.

As summarized, the incremental effect on cumulative transportation and traffic (marine) impacts during construction and operation of Alternatives 1 through 4 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 4 would not result in cumulative transportation and traffic (marine) impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternatives 5 and 6 would not contribute to cumulative impacts. Alternatives 5 and 6 do not include a project; therefore, a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for emergency discharges into various water courses. However, the emergency discharges would not have a significant cumulative impact on marine transportation. Therefore, the contribution is not cumulatively considerable, and Alternative 5 under CEQA and Alternative 6 under NEPA would not result in cumulative impacts on transportation and traffic (marine).

21.2.17 Utilities, Service Systems, and Energy

21.2.17.1 Scope of Analysis

Cumulative impacts on utilities can result from the combined demand of the program and project elements with past, present, and reasonably foreseeable future projects on any of the utilities for which the proposed project may have impacts. The geographic scope of the cumulative effect analysis of utilities depends on the service area of the individual utility providers and the jurisdiction over which increased demand for utility services from the program and project elements, as well as related projects, could reduce the availability of such utility services. Because the program and project elements have the capacity to affect the environment within the JOS service area, the region of analysis for cumulative impacts includes the city and county of Los Angeles and surrounding communities as identified in Figure 21-1. For stormwater, the geographic scope includes the WRPs, areas along the onshore tunnel alignments, shaft sites, and immediately adjacent lands because these represent the drainage areas that would be influenced by the program and project elements. The service areas of the Los Angeles County Department of Public Works (LACDPW) (stormwater), the Metropolitan Water District (MWD) (water supply), and Southern California Edison (SCE) and LADWP (energy) encompass the city and county of Los Angeles. The analysis region for cumulative utilities impacts focuses on the JOS service area because the infrastructure immediately serving the program and project area is located within this service

area. Service subareas of utility providers are sufficiently separated such that increased service demands from the program and project alternatives would not threaten such provisions in other areas.

21.2.17.2 Impacts of Past, Present, and Foreseeable Future Projects

Construction and operation of past projects have created a demand for storm drain, potable water, and energy infrastructure that is currently accommodated by existing utility lines. Storm drains are maintained by the LACDPW in the program and project area. Water supply is provided by the MWD in the program area and by CalWater and the LADWP in the project area. Energy demands are met by SCE and the LADWP within the program area and mainly LADWP in the project area.

The LACDPW is responsible for the design, construction, operation, and maintenance of flood control facilities within the county. Flood control districts, the California Department of Transportation, and local agencies generally have maintenance responsibility for storm drain systems within cities, and the LACDPW coordinates responsibilities with multiple cities and jurisdictions under the NPDES permit program for stormwater/urban runoff discharges. Two major storm drains in the county are the Wilmington Drain and Dominguez Channel, and are expected to have sufficient capacity to accommodate normal demands as discussed in Chapter 11 and Chapter 20. Some of the projects identified in Figure 21-1 involve relocation and, in some cases, expansion of existing facilities within the Ports of Los Angeles and Long Beach. Additionally, many of the projects involve new or expanded land uses that may result in additional demand on utilities and service systems. These projects include the Pier 400 Container Terminal and Transportation Corridor Project (Project 1), Berths 226-236 (Evergreen) Container Terminal Improvements Project (Project 8), Berths 97–109 China Shipping Terminal Development Project (Project 16), Berths 171–181 Pasha Marine Terminal Improvements (Project 17), Berths 302–305 APL Container Terminal Expansion (Project 24), Berths 121–131 Yang Ming Container Terminal (Project 30), Dana Strand Public Housing Redevelopment Project (Project 73), Ponte Vista (Project 83), and Middle Harbor Terminal Redevelopment, Port of Long Beach (Project 109). The related projects would likely require construction and/or expansion of stormwater utility systems on their respective sites, and may have to connect with nearby supply utility lines (usually in streets and other public rights-of-way). The construction of various utility lines would be carried out as part of the individual projects. However, because the storm drain and utility lines have adequate capacity, past, present and reasonably foreseeable future projects would not result in significant cumulative impacts on stormwater utility systems.

Water supplies for the MWD are detailed in various annual and planning reports using the supply provided during the single driest year and the multiple dry year hydrology scenarios. Water demand in the MWD service area would be met throughout 2030 through the use of State Water Project and Colorado River Aqueduct water supplies, as well as existing and planned conservation measures as discussed in Chapter 20. CalWater provides water supply services to the JWPCP through the Rancho Dominguez District. Water demand for the Rancho Dominquez District is forecasted in CalWater's urban water management plan and is expected to be sufficient throughout 2025. The LADWP provides water service to the city of Los Angeles, as well as to portions of Culver City, South Pasadena, West Hollywood, the Port of Los Angeles, and the community of San Pedro. According to the water demand and supply calculations in its 2005 urban water management plan, LADWP expects to be able to meet future demand with a combination of existing supplies, planned supplies, and MWD purchases (LADWP 2005). Many of the projects identified in Figure 21-1 are Port of Los Angeles and Port of Long Beach redevelopment projects, and some may require expansion of facilities. Additionally, some of the projects identified in Figure 21-1 involve new or expanded land uses that my result in additional utility demands. These projects include the Pier 400 Container Terminal and Transportation Corridor Project (Project 1),

Berths 136–147 Marine Terminal, West Basin (Project 2), Berth 226-236 (Evergreen) Container Terminal Improvements Project (Project 8), Berths 171–181 Pasha Marine Terminal Improvements Project (Project 17), Berths 302–305 (APL) Container Terminal Improvements Project (Project 24), Berths 121-131 (Yang Ming) Container Project (Project 30), Dana Strand Public Housing Redevelopment Project (Project 73), Ponte Vista (Project 83), and the Middle Harbor Terminal Redevelopment (Project 109). The number of related projects would increase the demands for water supply. However, based on the sufficient water supplies reported by the MWD, CalWater, and LADWP throughout 2025, the past, present, and reasonably foreseeable future projects would not result in a significant cumulative impact on the provision of water.

SCE is the main energy provider in the county with LADWP servicing the demands in the city of Los Angeles. SCE is projected to have adequate supply to provide for projected demands in the region. SCE has planned major infrastructure and replacement projects, including a proposed investment of $20 billion during the coming years to update the region's distribution and transmission grids to provide for the growth of electricity demand in the region and renewable energy supply requirements, as discussed in Chapter 20. The completion of these projects, along with the projected power supply, is expected to aid in the provision of electricity for the region's increased demand through 2030 and beyond. The LADWP recently approved its 2007 Power System Integrated Resource Plan for the entire service area. This energy resource planning document provides a framework for assuring that the future energy needs of the service area are met (LADWP 2007a). The LADWP maintains various generating and distribution substations throughout the greater Los Angeles area, including generating and distribution centers in and near the Port of Los Angeles, and is expected to have supplies sufficient to meet demands throughout 2027. Many of the projects identified in Figure 21-1 are Port of Los Angeles and Port of Long Beach redevelopment projects, and some may require expansion of facilities. Furthermore, several of the projects identified in Figure 21-1 involve new or expanded land uses that may result in additional demand on electricity. These projects include those mentioned previously for stormwater and water supply demand. These related projects would place an additional demand on electricity; however, based on the sufficient supply of electricity, the electricity demand of the past, present, and reasonably foreseeable future projects would not result in the need to construct new unplanned infrastructure and would not create a cumulatively considerable impact.

Alternative 1 Through Alternative 4

Alternatives 1 through 4 would result in less than significant cumulative impacts on utilities, service systems, and energy. Alternatives 1 through 4 would not require expansion or construction of new stormwater drainage facilities. Implementation of the program and project elements would alter drainage patterns by changing the location of stormwater discharge and stormwater runoff velocities at each of the proposed WRPs and shaft sites. However, the Sanitation Districts would be required to adhere to the grading and erosion control measures of Appendix J of the Los Angeles County Municipal Code, Chapter IX of the City of Los Angeles Municipal Code, the development construction control measures of Chapter 8 of the City of Carson Municipal Code, the stormwater management control measures of Section 18 of the City of Pomona Municipal Code, the stormwater and urban runoff prevention and control measures of Chapter 6.32 of the City of Cerritos Municipal Code, and Chapter 18.95 of the City of Long Beach Municipal Code, as well as comply with the requirements of the SWPPP. The Sanitation Districts would comply with all applicable city and county municipal codes regarding stormwater control. Compliance with the NPDES would require a SWPPP to be developed and implemented prior to construction if the site includes 1 acre or more of disturbed area. The SWPPP would identify applicable water quality best management practices to effectively control construction-related pollutants and stormwater generation, including alteration of the drainage patterns and changes in volume and velocity of flow. Therefore, Alternatives 1 through 4 would not result in a cumulative considerable impact requiring the construction of new stormwater drainage facilities or expansion of existing facilities.

Furthermore, Alternatives 1 through 4 would not result in increased water demands requiring new or expanded entitlements of water supply. Implementation of the program and project elements would result in an increase in potable water demand during construction activities only and, therefore, would be temporary and limited. Alternatives 1 through 4 would require a maximum of 206 acre-feet per year (AFY), with a maximum of 69 AFY provided by CalWater and 137 AFY provided by the LADWP for a maximum duration of 8 years. This equates to a maximum of approximately 0.2 percent of the projected future supply of CalWater for 2025 and approximately 0.01 percent of the projected future supply of the LADWP for 2030. Therefore, both the LADWP and CalWater are projected to have sufficient projected supplies to support the demand associated with construction. Not only would the projected water supply exceed the estimated demand for potable water during construction, the demand on the potable water supply would be temporary and would be limited to the duration of construction. As a result, Alternatives 1 through 4 would not create a significant cumulative impact or make a considerable contribution to a significant cumulative impact related to water supply.

Finally, Alternatives 1 through 4 would not result in increased energy demands requiring new or expanded energy supply and distribution infrastructure that are not anticipated by adopted plans or programs. Implementation of the program and project elements would result in increased demands for electricity during construction activities only and, therefore, would be temporary and limited. The maximum power requirement for Alternatives 1 through 4 would be 49,000 kilovolt-amperes for a maximum duration of 8 years as described in Chapter 20. The amount of energy required for the construction of Alternatives 1 through 4 would be greater than the existing demand for energy in the JOS service area; however, the estimated energy demand for construction is well within the estimated future projected supply for energy provided by SCE and the LADWP. Additionally, the demand on the energy supply would be temporary and would be limited to the duration of construction. Therefore, Alternatives 1 through 4 would not result in a significant increase in demands for electricity or make a considerable contribution to a significant cumulative impact.

In summary, the incremental effect on cumulative utilities, service systems, and energy impacts during construction and operation of Alternatives 1 through 4 would be less than significant. Therefore, the contribution is not cumulatively considerable, and construction and operation of Alternatives 1 through 4 would not result in cumulative utilities, service systems, and energy impacts under CEQA and NEPA.

Alternative 5 and Alternative 6

Alternatives 5 and 6 do not include a project, and a new or modified ocean discharge system would not be constructed. As a consequence of taking no action, there would be a greater potential for an emergency discharge of secondary effluent into various water courses, such as the Wilmington Drain, as described in Section 3.4.1.5. Discharges into the Wilmington Drain would flow into Machado Lake (also known as Harbor Lake) in Ken Malloy Harbor Regional Park. The temporary release of secondary treated effluent to Machado Lake would be considered a violation of the JWPCP's NPDES permit.

The Wilmington Drain has the capacity to handle a discharge from the JWPCP during normal flow or dry-weather flow events. However, during a storm event, the combined storm flow and discharge from the JWPCP could exceed the capacity of the Wilmington Drain. If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the JWPCP could overflow and untreated wastewater could enter various water courses. Untreated wastewater overflowing out of the sewers would likely enter the adjacent storm drains tributary to the Dominguez Channel and the Los Angeles River. Although the existing capacities could be exceeded, no new stormwater drains or expansion of stormwater drains would be constructed because the Sanitation Districts cannot legally discharge into the Wilmington Drain or allow an overflow to enter stormwater drainage systems. Therefore, Alternatives 5 and 6 would not require or result in the expansion of existing stormwater drainage facilities.

However, a discharge of secondary effluent into the Wilmington Drain or a sewer overflow would both result in exceeding wastewater treatment requirements of the Regional Water Quality Control Board. In the case of a sewer overflow, there could be disruptions to utilities, such as wastewater and stormwater conveyance systems, due to the increased flow demands. Additionally, sewer overflow that is not captured by storm drains could result in intrusion and contamination of entrenched utilities, groundwater, and local fresh water production wells. Therefore, various utilities could be significantly impacted.

It is unlikely that an emergency discharge into the Wilmington Drain or a sewer overflow would be captured and treated subsequently. Therefore, the contribution is cumulatively considerable, and operation of Alternative 5 under CEQA and Alternative 6 under NEPA would result in cumulative impacts on utilities, service systems, and energy.

21.2.18 Cumulative Impact Summary

A summary of significant cumulative impacts for all alternatives is provided in Table 21-1.

Table 21-1. Summary of Significant Cumulative Impacts by Alternative (Program and Project)

	Alternative										
	1		2		3		4[a]		5[b]		6
Environmental Resource Area	**C**	**O**	**C**	**O**	**C**	**O**	**C**	**O**	**C[c]**	**O**	**O**
Aesthetic Resources							X				
Air Quality	X		X		X		X				
Biological Resources (Terrestrial)											
Cultural Resources											
Geology, Soils, and Mineral Resources										X	X
Greenhouse Gases[d]	X		X		X		X				
Hazards and Hazardous Materials											
Hydrology, Water Quality, and Public Health										X	X
Land Use and Planning											
Marine Environment (Marine Hydrology, Water Quality, Biological Resources, Noise, and Public Health)										X	X
Noise and Vibrations (Terrestrial)											
Employment, Housing, Socioeconomics, and Environmental Justice											
Public Services											
Recreation										X	X
Transportation and Traffic (Terrestrial)											
Transportation and Traffic (Marine)											
Utilities, Service Systems, and Energy										X	X

[a] Recommended alternative.
[b] Significance findings from the 2010 Plan, as relevant, apply in addition to any determinations shown in this table.
[C] Cumulative construction impacts for program elements are the same as for Alternatives 1 through 4, excluding process optimization at the WRPs.
[d] Applies to CEQA only.
C = construction
O = operation
X = significant cumulative impact

21.3 Growth-Inducing Impact Analysis

As stated in Chapter 1, the overall objective of the proposed Clearwater Program Master Facilities Plan is to ensure adequate JOS wastewater system capacity and reliability through the year 2050 by:

- Providing adequate system capacity to meet the needs of the growing population
- Providing for overall system reliability by allowing for the inspection, maintenance, repair, and replacement of aging infrastructure
- Providing support for emerging recycled water reuse and biosolids beneficial use opportunities
- Providing a long-term solution for meeting water quality requirements set forth by regulatory agencies

21.3.1 Direct Population-Generating Uses

None of the alternatives include the development of new housing or population-generating uses that would directly induce population growth. Furthermore, the alternatives are located in a highly urbanized region which has experienced significant development over the past century. Many of the communities within the service area of the JOS are established communities and are primarily built out. Therefore, the alternatives would not directly trigger new residential development in the area served by the JOS.

21.3.2 Growth Accommodation

The population of the area served by the JOS is projected to increase to a level that cannot be accommodated by the existing JOS. The population of the area served by the JOS was approximately 5.1 million in 2008 and is projected to increase to approximately 6.3 million by 2050. The wastewater flows from the projected 2050 population would be approximately 612 MGD, resulting in a JOS shortfall of approximately 20 MGD by 2050. This population would increase regardless of whether Alternatives 1 through 4 were implemented. Therefore, Alternatives 1 through 4 are not growth-inducing but, rather, growth-accommodating.

The fact that Alternatives 1 through 4 are growth-accommodating rather than growth-inducing is evident in the timeline of implementation. Much of Alternatives 1 through 4 would be implemented as necessary based on future flows. Therefore, the chosen alternative would accommodate the increased demand due to population growth as needed rather than creating excess capacity that could induce population growth.

21.3.3 Expansion of Public Services or Utilities

Because the alternatives involve improvements to the JOS wastewater system, they inherently involve the expansion of a public utility. However, the improvements would be growth-accommodating rather than growth-inducing, as described in Section 21.3.2. The construction and operation of the chosen alternative would generate increased demand for potable water and/or electricity. However, the demand for water and electricity would be adequately served by existing utilities, and the chosen alternative would not require new unplanned supplies, facilities, or expansion of existing facilities that provide these services. (See the Preliminary Screening Analysis [Appendix 1-A] and Chapter 20 for in-depth discussion of this topic.)

21.3.4 Economic Effects

As discussed in Section 21.3.1, none of the alternatives would include development of new housing. The service area for the JOS includes established communities that are primarily built out. Alternatives 1 through 4 are growth-accommodating, responding to the increased demand of population growth that would occur regardless of whether any of the alternatives were implemented. Because these alternatives would not trigger substantial increased population, they would also not result in the need for new utilities, infrastructure, or public services that could cause an economic impact within the service area.

21.3.5 Precedent Setting

Alternatives 1 through 4 would not set a precedent that could encourage and facilitate other activities that could significantly affect the environment. The Sanitation Districts have an existing ocean discharge system that is currently being used and the project is proposed in response to growth in the region as well as the need to increase infrastructure reliability. The Clearwater Program includes a long-range master facilities plan addressing needs through year 2050 and would not, therefore, set a precedent to develop similar projects or programs.

21.4 Summary of Growth-Inducing Impacts

The alternatives do not involve the construction or operation of direct growth-inducing uses such as housing. Although the chosen alternative would involve improvements to JOS wastewater system capacity, these would be implemented to accommodate the increased flows caused by a growing population in the service area with the goal of preventing a shortfall in the JOS capacity. The improvements would keep pace with flow increases as predicted by population increases in the JOS and would not create excess wastewater capacity that could stimulate population growth. Therefore, the chosen alternative would not induce population growth but, rather, accommodate growth that would occur independent of implementation.

Chapter 22
COMPARISON OF ALTERNATIVES

22.1 Introduction

This chapter compares the alternatives summarized in Section 3.4 and evaluated in Chapters 4 through 20. Both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) require analysis of a reasonable range of alternatives. Accordingly, this environmental impact report/environmental impact statement (EIR/EIS) co-equally analyzes four alternatives that feasibly meet the objectives of the Clearwater Program, along with the No-Project Alternative (CEQA) and the No-Federal-Action Alternative (NEPA). This level of analysis is included to provide sufficient information and meaningful detail about the environmental effects of each alternative so that informed decision-making can occur.

As described in Chapter 3, the Clearwater Program Master Facilities Plan (MFP) identifies improvements throughout the Joint Outfall System (JOS) at both the program and project level. The program and project were combined into six alternatives that were carried through the analysis of impacts in Chapters 4 through 20. The six alternatives are:

- Alternative 1
- Alternative 2
- Alternative 3
- Alternative 4 (Recommended Alternative)
- Alternative 5 (No-Project Alternative)
- Alternative 6 (No-Federal-Action Alternative)

Other alternatives that were considered but eliminated during the alternatives screening process are summarized in Section 3.2 and discussed in detail in Chapter 6 of the Clearwater Program MFP.

22.2 CEQA Evaluation of Alternatives

22.2.1 CEQA Requirements

The CEQA requirements for the evaluation of alternatives in an environmental impact report (EIR) are described in Section 1.2.1. The CEQA Guidelines (14 California Code of Regulations [CCR] Section 15126.6) require that an EIR present a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic project objectives but would avoid or substantially lessen any significant effects of the project. Section 15126.6 of the CEQA Guidelines also requires an evaluation of the comparative merits of the alternatives. An EIR is not required to consider alternatives that are infeasible.

22.2.2 CEQA Alternatives Comparison

The results of the CEQA significance analysis for each resource area, and the alternatives that would result in significant unavoidable impacts under CEQA, as discussed in Chapters 4 through 20 are summarized in Table 22-1. The CEQA scope of analysis includes both program and project elements. As detailed in Chapter 3, Alternatives 1 through 4 (Program) are the same. Project elements were assembled into a range of four alternatives, Alternatives 1 through 4 (Project), that propose a new ocean discharge system and/or a modified ocean discharge system. The program and project were assembled into four system-wide alternatives for the JOS, Alternatives 1 through 4. The CEQA alternatives comparison includes these alternatives in addition to Alternative 5, which is the CEQA No-Project Alternative. Under Alternative 5, there would be neither federal nor local approval of the project or program. Without the program, the Sanitation Districts would continue to expand, upgrade, and operate the JOS in accordance with the 2010 Joint Outfall System Master Facilities Plan (2010 Plan). Without the project, there is an increased potential for emergency discharges and/or sewer overflows into various water courses as described in Section 3.4.1.5.

Table 22-1. Summary of CEQA Significance Analysis by Alternative (Program and Project)

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4[a]	Alternative 5[b]
Aesthetic Resources	S	S	S	S	N
Air Quality	S	S	S	S	L
Biological Resources (Terrestrial)	M	M	M	M	N
Cultural Resources	S	S	S	S	M
Geology, Soils, and Mineral Resources	M	M	M	M	S
Greenhouse Gases	S	S	S	S	L
Hazards and Hazardous Materials	L	L	L	L	L
Hydrology, Water Quality, and Public Health	M	M	M	M	S
Land Use and Planning	N	N	M	M	N
Marine Environment (Marine Hydrology, Water Quality, Biological Resources, Noise, and Public Health)	M	M	M	M	S
Noise and Vibrations (Terrestrial)	M	M	M	M	M
Employment, Housing, Socioeconomics, and Environmental Justice	L	L	L	L	L
Public Services	L	L	L	L	L
Recreation	L	L	L	L	S
Transportation and Traffic (Terrestrial)	M	M	M	M	M
Transportation and Traffic (Marine)	L	L	L	L	N
Utilities, Service Systems, and Energy	L	L	L	L	S

Alternative 6 is included in Table 22-2; it is the NEPA No-Federal Action Alternative and is not applicable under CEQA.

[a] Recommended alternative.

[b] Significance findings from the 2010 Plan, as relevant, apply in addition to any determinations shown in this table.

S = significant unavoidable impact

M = significant but mitigable to less than significant impact

L = less than significant impact

N = no impact

As shown in Table 22-1, Alternatives 1, 2, 3, and 4 would result in significant unavoidable impacts for aesthetic resources, air quality, cultural resources, and greenhouse gases (GHGs). As analyzed in this EIR, Alternative 5 would result in significant unavoidable impacts for geology, soils, and mineral resources; hydrology, water quality and public health; marine environment; recreation; and utilities, services systems, and energy.

22.3 NEPA Evaluation of Alternatives

22.3.1 NEPA Requirements

The NEPA requirements for the evaluation of alternatives in an environmental impact statement (EIS are described in Section 1.2.2. NEPA (40 Code of Federal Regulations [CFR] Section 1502.14[a]) requires that an EIS explore and evaluate a range of reasonable alternatives to the project. The Clean Water Act (CWA) Section 404(b)(1) Guidelines (40 CFR Part 230) also address alternatives, stating that no discharge of dredged or fill material will be permitted if there is a practicable alternative to the proposed discharge that would have a less adverse impact on the aquatic ecosystem, so long as that alternative does not have other significant adverse environmental consequences. Chapter 3 of this EIS/EIR sets forth potential alternatives to the recommended plan, and Chapters 4 through 20 evaluate their environmental impacts.

22.3.2 NEPA Alternatives Comparison

As detailed in Section 3.5, the U.S. Army Corps of Engineers' (Corps') NEPA scope of analysis is limited to the project portion of each alternative. Consequently, the NEPA alternatives comparison precludes the program and evaluates only Alternatives 1 through 4 (Project) and Alternative 6, which is the NEPA No-Federal Action Alternative. Because Alternative 5 is the CEQA No-Project Alternative, there are no significance determinations under NEPA for Alternative 5. Note that Alternative 6 would not require a Corps permit (i.e., it represents what is reasonably expected to occur at the project site absent a Corps permit). The analysis of Alternative 6 evaluates what would occur if the federal portion of the project were not approved. The No-Federal-Action Alternative is the same as the NEPA baseline for this project, and would be the same as the proposed program in the absence of any federal action. The NEPA baseline is what can be predicted to occur if the federal portion of the project were not approved and the ocean discharge system were not constructed and/or modified. Without the project, there is an increased potential for emergency discharges and/or sewer overflows into various water courses as described in Section 3.4.1.6. Such discharges and/or overflows would not be predictable occurrences, and, therefore, are not considered the NEPA baseline. However, there would be a greater potential under Alternative 6 for emergency discharges and/or sewer overflows, and the impacts identified are the result of what would occur.

A summary of the results of the NEPA significance analysis for each resource area is provided in Table 22-2. NEPA impact determinations are identified by alternative at the project level (the analysis includes project-level impacts, not cumulative effects).

Table 22-2. Summary of NEPA Significance Analysis by Alternative (Project)

Environmental Resource Area	Alternative 1	Alternative 2	Alternative 3	Alternative 4[a]	Alternative 6
Aesthetic Resources	S	S	S	S	N
Air Quality	S	S	S	S	N
Biological Resources (Terrestrial)	N	N	N	N	N
Cultural Resources	S	S	S	S	N
Geology, Soils, and Mineral Resources	M	M	M	M	S
Greenhouse Gases[b]	---	---	---	---	---
Hazards and Hazardous Materials	L	L	L	L	L
Hydrology, Water Quality, and Public Health	L	L	L	L	S
Land Use and Planning	N	N	M	M	N
Marine Environment (Marine Hydrology, Water Quality, Biological Resources, Noise, and Public Health)	M	M	M	M	S
Noise and Vibrations (Terrestrial)	M	M	M	M	N
Employment, Housing, Socioeconomics, and Environmental Justice	S	S	L	L	L
Public Services	L	L	L	L	N
Recreation	L	L	L	L	S
Transportation and Traffic (Terrestrial)	L	L	L	L	N
Transportation and Traffic (Marine)	L	L	L	L	N
Utilities, Service Systems, and Energy	L	L	L	L	S

Alternative 5 is included in Table 22-1; it is the CEQA No-Project Alternative, which does not involve a federal action and is not applicable under NEPA.

[a] Recommended alternative.

[b] In compliance with the NEPA implementing regulations and Council on Environmental Quality guidance, no impact determination was made. Furthermore, there is currently no federal plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions, and the Corps is not subject to California state laws and policies directed at regulating and reducing greenhouse gas emissions.

S = significant unavoidable impact

M = significant but mitigable to less than significant impact

L = less than significant impact

N = no impact

As shown in Table 22-2, Alternatives 1, 2, 3, and 4 (Project) would result in significant unavoidable impacts on aesthetic resources, air quality, and cultural resources. Additionally, Alternatives 1 and 2 would result in significant unavoidable impacts on employment, housing, socioeconomics, and environmental justice. Alternative 6 (Project) would result in significant unavoidable impacts on geology, soils, and mineral resources; hydrology, water quality and public health; marine environment; recreation; and utilities, services systems, and energy.

22.4 Analysis of Impacts of Alternatives

Overall, less than significant impacts and impacts that can be mitigated to less than significant for Alternatives 1 through 4 include biological resources (terrestrial); geology, soils, and mineral resources; hazards and hazardous materials; hydrology, water quality and public health; land use and planning; marine environment; noise and vibrations (terrestrial); public services; recreation; transportation and traffic (terrestrial); transportation and traffic (marine); and utilities, service systems, and energy. Generally, for Alternatives 1 through 4, there are very few program or project operational impacts that would result in significant unavoidable impacts or require mitigation. The exceptions are discussed in

Section 22.4.1. When comparing the program to the project, it is primarily construction of the project that would result in the significant impacts under each alternative. One exception is air quality and GHGs, which are evaluated regionally thereby combining program and project elements. However, in this chapter, the analysis does not distinguish between program and project impacts or construction or operational impacts, but instead considers the alternative as a whole.

Alternative 5 (No Project) and Alternative 6 (No Federal Action) have significant operational impacts, and thus, an alternative whereby neither the program nor the project are implemented would not avoid environmental impacts. Both Alternatives 5 and 6 could result in an emergency discharge of secondary effluent to the Wilmington Drain. If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the Joint Water Pollution Control Plant (JWPCP) could overflow, and untreated wastewater could enter various water courses, such as the Dominguez Channel, the Los Angeles River, and ultimately, the Los Angeles Harbor. Discharges of secondary effluent and releases of untreated wastewater would be violations of the JWPCP National Pollutant Discharge Elimination System (NPDES) permit and the CWA, respectively. Significant impacts include impacts on water quality (freshwater and marine), geology and soils through erosion if the release resulted in large amounts of fast-moving water, recreation at the harbor because of degraded water quality, and utilities because wastewater systems would not be able to accommodate the flows.

22.4.1 Resources With Significant Unavoidable Impacts

22.4.1.1 Aesthetic Resources

Significant and unavoidable impacts on aesthetic resources would occur during construction of Alternatives 1 through 4 because work would occur adjacent to the coast, a highly valued scenic area protected by local plans to preserve the scenic integrity of coastal views. Rehabilitation of the existing ocean outfalls, which is included in Alternatives 1 through 4, would involve significant aesthetic impacts on land-based views of the ocean during construction. Aesthetic impacts under Alternatives 3 and 4 are related to construction at the Angels Gate and Royal Palms shaft sites, which are both coastal sites close to residential and recreational areas. Under Alternatives 1 and 2, construction activities and the associated noise barrier would degrade visual quality for residents adjacent to the JWPCP East shaft site. In summary, Alternatives 1 through 4 would have significant unavoidable aesthetic impacts during construction associated with a shaft site and rehabilitation of the existing ocean outfalls.

22.4.1.2 Air Quality

Significant and unavoidable peak day air quality impacts would occur at a regional level during construction of Alternatives 1 through 4. Each alternative would exceed the SCAQMD daily significance thresholds for construction-related emissions before mitigation. Specifically, Alternatives 1, 3, and 4 would exceed thresholds for volatile organic compounds (VOC) and nitrogen oxides (NO_X), and Alternative 2 would exceed thresholds for VOC, carbon monoxide (CO), and NO_X. Although mitigation would reduce emissions, impacts would remain significant for NO_X for all alternatives. The magnitude of the significance is directly related to the length of the alignment, the duration of construction, and the overlap of elements during construction with Alternatives 1, 2, and 3 having greater emissions than Alternative 4. Alternative 4 has the smallest emissions contribution of the four alternatives and would be the preferred alternative based on air emissions.

22.4.1.3 Cultural Resources

Significant and unavoidable impacts on paleontological resources would occur during construction of Alternatives 1 through 4. The rock face being removed during onshore and offshore tunnel construction could not be observed for the presence of paleontological resources; thus, if present, paleontological resources would be destroyed by the tunnel boring machine. Likewise, at a certain depth, paleontological resources may be encountered during construction at the shaft sites; these resources could not be observed and, if present, would also be destroyed. Impacts are relatively equal across the alternatives, but it is likely that more paleontological resources would be encountered in the longer alignments; thus, Alternatives 3 and 4 are preferred over Alternatives 1 and 2 based on alignment length. Alternative 4 would be the preferred alternative with regard to paleontological resources based on alignment length.

22.4.1.4 Greenhouse Gases

There are significant and unavoidable GHG impacts for each of the alternatives. The magnitude of the significance is directly related to the length of the alignment and the duration of construction. Estimates of total metric tons of carbon dioxide-equivalent (CO_2e) emissions range from largest (Alternative 1) to smallest (Alternative 4). Alternative 4 has the smallest GHG contribution of the four alternatives and would be the preferred alternative based on GHG emissions.

22.4.1.5 Employment, Housing, Socioeconomics, and Environmental Justice

Under NEPA, there are significant and unavoidable environmental justice impacts for Alternatives 1 and 2. Construction of Alternatives 1 and 2 would result in environmental impacts that are disproportionately high and adverse on minority and low-income populations.

22.4.2 Comparison of Alternatives

Alternative 4 has the least amount of in-water work, shortest overall tunneling distance, only two shaft sites (same as Alternative 3), least number of truck trips, and shortest construction duration. Therefore, impacts would be reduced for Alternative 4 when compared to Alternatives 1, 2, and 3. This is demonstrated by the reduced number of GHG emissions and air quality impacts, and the reduced potential to encounter paleontological resources when compared to Alternatives 1, 2, and 3. Alternative 1 has the longest alignment under water and in total length, as well as four shaft sites (same as Alternative 2), and would generate the most truck trips. However, Alternative 1 would result in a maximum diffuser depth of approximately 200 feet below sea level, which is consistent with that of the existing ocean outfalls (Alternative 4). Alternatives 1 and 2 would result in disproportionately high and adverse environmental impacts on minority and low-income populations. The riser/diffuser area for Alternatives 2 and 3 extends within the boundaries of the U.S. Environmental Protection Agency (EPA)-designated Palos Verdes Shelf Superfund study area. Furthermore, Alternatives 2 and 3 would result in a maximum diffuser depth of approximately 175 feet below sea level, which is less than that of the existing ocean outfalls.

22.5 Environmentally Preferred and Superior Alternative

Alternative 4 (recommended alternative) is the environmentally preferred and superior alternative. As discussed in Section 22.4.2, impacts would be reduced for Alternative 4, when compared to Alternatives 1, 2, and 3. Alternative 4 has only two shaft sites, the shortest overall tunneling distance, the fewest number of truck trips, and the shortest construction duration. Alternative 4 would not result in significant and unavoidable environmental impacts that are disproportionately high and adverse on

minority and low-income populations. Furthermore, in-water construction activities would be reduced for Alternative 4, which would utilize the existing ocean outfalls and would not require offshore tunneling or new construction of a riser and diffuser. This would avoid the mitigable impacts (discussed in this EIR/EIS) that would occur in the marine environment during offshore construction under Alternatives 1, 2, and 3. Alternative 4 would reduce the amount of marine vessel activity, eliminate the need for dredge material disposal, reduce the duration of in-water construction, and reduce the amount of air quality impacts and GHG emissions when compared to Alternatives 1, 2, and 3.

Chapter 23
SIGNIFICANT IRREVERSIBLE IMPACTS

23.1 Introduction

Pursuant to Section 15126.2(c) of the California Environmental Quality Act Guidelines, an environmental impact report must consider any significant irreversible environmental changes that would be caused by the proposed program and project should they be implemented. Specifically, Section 15126.2(c) states:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as a highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

23.2 Analysis of Irreversible Changes

Alternative 4 is the recommended alternative for the Clearwater Program. Alternative 4 would require the use of non-renewable resources such as fossil fuels and non-renewable construction materials. These resources would be consumed during construction and operation. Fossil fuels in the form of diesel oil and gasoline would be used for construction equipment and vehicles. Electricity, which requires the burning of fossil fuels, would also be consumed during construction and operation. These energy resources would be irretrievable and irreversible. However, the non-recoverable materials that would be used during construction and operation activities would be accommodated by existing supplies. Although the increase in the amount of materials used would be limited, they would nevertheless be unavailable for other uses.

Construction activities that result in loss or permanent degradation of an aspect of the physical environment that is non-renewable have the most potential to result in irreversible changes. The tunnel boring utilized to construct the onshore tunnel could damage or destroy unknown, unique paleontological resources if these resources exist along the tunneling alignment as discussed in Chapter 7. Damage or destruction of these resources would be significant and irreversible. Although other significant impacts would occur during construction and operation, as described in the respective chapters, they would not be irreversible.

Consequently, implementation of Alternative 4 would result in significant irreversible changes due to the use of non-renewable construction materials, energy resources, and fossil fuels during construction and operation. Additionally, Alternative 4 (Project) could result in significant irreversible damages to paleontological resources during construction. However, these commitments and damages would occur in accordance with the Clearwater Program. The Clearwater Program supports the wastewater management needs of the Joint Outfall System through the year 2050 including improved system capacity and reliability, increased beneficial use of recycled water and biosolids, and continued regulatory

compliance. Therefore, the significant irreversible changes have been deemed acceptable in light of the Clearwater Program's overall benefits.

Chapter 24
LIST OF FEDERAL AND STATE PERMITS FOR ALL ALTERNATIVES

24.1 Introduction

Federal and state permits, as well as coordinations or approvals, required for all alternatives for the Clearwater Program are listed in Table 24-1. Included are federal permits that are administered by state agencies.

Table 24-1. Federal and State Permits

Agency/Permit and Action	Program	Project
Federal		
United States Army Corps of Engineers		
Permit under Section 404 of the Clean Water Act for discharge of dredged or fill material into waters of the United States[a]	X	X
Permit under Section 103 of the Marine Protection, Research, and Sanctuaries Act for the transportation of dredged material intended for ocean disposal		X
Permit under Section 10 of the Rivers and Harbors Act for work or structures in or affecting navigable waters of the United States		X
United States Fish and Wildlife Service		
Compliance with Section 7 of the federal Endangered Species Act for effects to listed species and critical habitat through coordination via the lead federal agency	X	X
National Marine Fisheries Service		
Compliance with Section 7 of the federal Endangered Species Act for effects to listed species and critical habitat through coordination via the lead federal agency		X
Compliance with the federal Marine Mammal Protection Act for effects (e.g., take or harassment) to marine mammals through coordination via the lead federal agency		X
Compliance with the federal Magnuson-Stevens Fishery Act for effects to essential fish habitat through coordination via the lead federal agency		X
United States Environmental Protection Agency		
Confirm conformity with the Clean Air Act		X
Determine suitability of dredged material for ocean disposal in accordance with Section 103 of the Marine Protection, Research, and Sanctuaries Act		X
Review and submit recommendations to the Corps related to the issuance of permits under Section 103 of the Marine Protection, Research, and Sanctuaries Act, Section 404 of the Clean Water Act, and ensure compliance with Section 404(b)(1) of the Clean Water Act		X
Review and submit recommendations to the California State Water Quality Control Board for the National Pollutant Discharge Elimination System permit for discharge of treated wastewater under Section 402 of the Clean Water Act	X	
Determine suitability of construction-related dewatering for ocean disposal or discharge into waters of the United States		X
Coordinate with the Los Angeles Regional Water Quality Control Board for issuance of 401 Water Quality Certification		X

Table 24-1 (Continued)

Agency/Permit and Action	Program	Project
United States Coast Guard		
Permit for Private Aids to Navigation for navigable waters of the United States		X
State		
Regional Water Quality Control Board [b]		
Permit under Section 402 of the Clean Water Act (National Pollutant Discharge Elimination System)		X
General Permit (National Pollutant Discharge Elimination System) for dewatering and construction activities	X	X
Water Quality Certification under Section 401 of the Clean Water Act	X	X
Waste Discharge Requirements under the Porter-Cologne Act		X
California Office of Historic Preservation		
Compliance with Section 106 of the National Historic Preservation Act through coordination via the lead federal agency		X
California Department of Fish and Game		
Streambed Alteration Agreement under Section 1602 of the California Fish and Game Code for activities that would alter a state river, stream, or other waters of the state	X	
Consistency Determination under Section 2080.1 of the California Fish and Game Code for take of state-listed endangered or threatened terrestrial and aquatic species (that are also listed under the federal ESA)	X	X
Compliance with oil spill prevention and response planning requirements set forth in Subdivision 4 of 14 CCR Division 1 for marine vessels carrying petroleum and nontank vessels over 300 gross tons (Under the California Office of Spill Prevention and Response).		X
California Coastal Commission		
Coastal Development Permit for development within the coastal zone		X
Federal Coastal Zone Management Act Consistency Determination		X
State Lands Commission		
Land Use Lease for encroachments, docks, dredging, and crossing on state tidal and submerged lands		X
California Department of Transportation		
Easements and/or rights-of-way		X

[a] The draft 404(b)(1) analysis is included as Appendix 24-A.
[b] Regional Water Quality Control Board-Los Angeles Region (Region 4) has jurisdiction in the project area.

Chapter 25
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Chapter 26
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Chapter 27
ABBREVIATIONS

σt	Seawater density
°C	degrees Celsius
°F	degrees Fahrenheit
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
µm	microns
µPa	micropascals
2010 Plan	JOS 2010 Master Facilities Plan
AADT	average annual daily traffic
AASHTO	American Association of State Highway and Transportation Officials
ACGs	allisions, collisions, and groundings
ACHP	Advisory Council on Historic Preservation
ADL	Aerially deposited lead
AER	Annual Emissions Reporting
AES	aesthetic resources
AFY	acre-feet per year
Alquist-Priolo Act	Alquist-Priolo Earthquake Fault Zoning Act
APE	area of potential effects
AQ	air quality
AQMP	air quality management plan
ARB	Air Resources Board
ASBS	area of special biological significance
ATCM	Airborne Toxic Control Measure
ATCS	Adaptive Traffic Control System
ATSAC	automated traffic surveillance and control
AWOIS	Automated Wreck and Obstruction Information System
AWTF	Advanced Water Treatment Facility

BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
basin plan	Water Quality Control Plan for the Los Angeles River Basin (Region 4)
BGEPA	Bald Eagle and Golden Eagle Protection Act
bgs	below ground surface
BIO	terrestrial biological resources
BIOS	Biogeographic Information and Observation System
BLM	U.S. Bureau of Land Management
BMPs	best management practices
BO	Biological Opinion
BOEMRE	Bureau of Ocean Energy Management, Regulation, and Enforcement
BP	before present
BRI	Benthic Response Index
BTEX	benzene, toluene, ethyl benzene, and xylenes
BUs	beneficial uses
CAA	Clean Air Act
Cal/OSHA	California Occupational Safety and Health Program
CalARP	California Accidental Release Prevention Program
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CalWater	California Water Service Company
CAO	cleanup and abatement orders
CARB	California Air Resources Board
CCA	California Coastal Act
CCC	California Coastal Commission
CCMP	California Coastal Management Program
CCNM	California Coastal National Monument
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CDO	cease and desist orders
CEC	California Energy Commission

CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CFU	colony forming units
CGS	California Geological Survey
CH_4	methane
CHHSLs	California Human Health Screening Levels
CI	cast iron
CIWQS	California Integrated Water Quality System Project
cm/s	centimeters per second
CMA	critical movement analysis
CMP	Congestion Management Program
CNEL	community noise equivalent level
CNG	compressed natural gas
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide-equivalent
committee	Harbor Safety Committee
Construction General Permit	General Permit for Discharges of Storm Water Associated with Construction Activity
Corps	U.S. Army Corps of Engineers
Cortese List	Department of Toxic Substances Control Hazardous Waste and Substances Sites
COTP	Captain of the Port
CPUC	California Public Utilities Commission
CR	California Code of Regulations
CR GRP	Climate Registry General Reporting Protocol
CRA	Colorado River Aqueduct
CRHR	California Register of Historic Resources
CSLC	California State Lands Commission
CSTF	Contaminated Sediment Task Force
CTR	California Toxics Rule
CUL	cultural resources
CWA	Clean Water Act

CWC	California Water Code
CZARA	Coastal Zone Act Reauthorization Amendments of 1990
CZMA	Coastal Zone Management Act
D/C	demand-to-capacity
DA	Department of the Army
dB	decibel
dB re 1µPa	decibel reference pressures that are 1 millionth of a Pascal
dBA	A-weighted decibels
dB_{PEAK}	decibels peak
dB_{RMS}	decibels root mean square
DDT	dichlorodiphenyltrichloroethane
DDT/PCB	dichlorodiphenyltrichloroethane/polychlorinated biphenyl
DFSP	Defense Fuel Support Point
DO	dissolved oxygen
DOF	California Department of Finance
DOGGR	California Division of Oil, Gas, and Geothermal Resources
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EDD	Employment Development Department
EDR	Environmental Data Resources, Inc.
EEZ	Exclusive Economic Zone
EFH	essential fish habitat
EIR	environmental impact report
EIR/EIS	environmental impact report/environmental impact statement
EIS	environmental impact statement
EMD	Emergency Management Department
EMS	emergency medical services
EPA	U.S. Environmental Protection Agency
EPB	earth-pressure balance
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration

FIRM	Flood Insurance Rate Map
FMPs	Fishery Management Plans
FORCO	Fletcher Oil and Refining Company
FRA	Federal Railroad Administration
ft/s	feet per second
FTA	Federal Transit Administration
FWPCA	Federal Water Pollution Control Act
g	acceleration due to gravity
g/bhp-hr	brake horsepower-hour
gpcd	gallons per capita per day
General Construction Permit	NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity
GEO	geology, soils, and mineral resources
GHG	greenhouse gas
GMWD	Global Maritime Wrecks Database
GVWR	gross vehicle weight rating
GWh	gigawatt hours
GWP	global warming potential
H_2S	hydrogen sulfide
HABs	harmful algal blooms
HAZ	hazards and hazardous materials
HCP	habitat conservation plan
HDPE	high-density polyethelene
HMI	hazardous materials inventory
hp	horsepower
HPOZ	historic preservation overlay zone
HRA	health risk analysis
HSWA	Hazardous and Solid Waste Amendments of 1984
HUD	Housing and Urban Development
HWCA	Hazardous Waste Control Act
HYD	hydrology, water quality (fresh water), and public health
Hz	hertz
ICF	ICF International
I-	Interstate

IHA	Incidental Harassment Authorization
IPCC	Intergovernmental Panel on Climate Change
IRP	Integrated Resources Plan
ITE	Institute of Transportation Engineers
ITS	Incidental Take Statement
IWG	Interagency Working Group
JEIP	Joint Emissions Inventory Program
JO	Joint Outfall
JOD	Joint Outfall Districts
JOS	Joint Outfall System
JWPCP	Joint Water Pollution Control Plant
kg	kilogram
kHz	kilohertz
KOP	key observation point
kV	kilovolts
kVA	kilovolt-amps
kWh	kilowatt hours
LACAWRP	La Cañada Water Reclamation Plant
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LADOT	Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAHD	Los Angeles Harbor Department
LAHD Construction Guidelines	LAHD Sustainable Construction Guidelines for Reducing Air Emissions
LARWQCB	Los Angeles Regional Water Quality Control Board
LAUSD	Los Angeles Unified School District
LAXT	Los Angeles Export Terminal
LBWRP	Long Beach Water Reclamation Plant
LCFS	low carbon fuel standard
LCP	local coastal program
LCWRP	Los Coyotes Water Reclamation Plant
L_{dn}	day-night level
L_{eq}	equivalent sound level

$L_{eq}[h]$	1-hour A-weighted equivalent sound level
L_{max}	maximum sound level
LEDPA	least environmentally damaging practicable alternative
LNM	Local Notice to Mariners
LOA	Letter of Authorization
LOS	level of service
LPG	Liquefied Petroleum Gas
LSTs	Localized significance thresholds
LTM-04	long-term control measure No. 4
LTPP	Long Term Procurement Plan
LU	land use
LUSTs	leaking underground storage tanks
L_{xx}	Percentile-exceeded sound level
m/s	meters per second
MAR	marine environment
Marine Exchange	Marine Exchange of Southern California
MATES	Multiple Air Toxics Exposure Study
MBTA	Migratory Bird Treaty Act
MFP	Master Facilities Plan
MG	million gallons
mg/L	milligrams per liter
MGD	million gallons per day
M_L	local magnitude
MLLW	mean lower low water level
MLMA	Marine Life Management Act of 1998
MLPA	Marine Life Protection Act of 1999
MM	Mitigation Measure
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
MPA	marine protected area
mph	miles per hour
MPRSA	Marine Protection, Research, and Sanctuaries Act
MS4	Municipal Separate Storm Sewer Systems
MSA	Magnuson-Stevens Fishery Conservation and Management Act

MSB	Marine Safety Branch
MSHCP	Multi-Species Habitat Conservation Plan
MT	metric tons
MTA	Los Angeles County Metropolitan Transportation Authority
MTSA	Maritime Transportation Security Act
mty	metric tons per year
MW	megawatts
M_W	moment magnitude
MWD	Metropolitan Water District of Southern California
MWh	megawatt-hours
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NFIP	National Flood insurance Program
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
nm	nautical miles
NMFS	National Marine Fisheries Service
NMHC	non-methane hydrocarbons
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOD	notice of determination
NOI	terrestrial noise and vibrations
NOP	notice of preparation
NOP/NOI	notice of preparation/notice of intent
NORS	North Outfall Replacement Sewer
NO_X	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
Ocean Plan	Water Quality Control Plan for Ocean Waters of California
OCS	Outer Continental Shelf

ODMDS	Ocean Dredged Material Disposal Site
OEHHA	Office of Environmental Health Hazard Assessment
OEM	Office of Emergency Management
OES	Office of Emergency Services
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
OSPR	California Office of Spill Prevention and Response
PAHs	polycyclic aromatic hydrocarbons
PATON	private aid to navigation
PBR	potential biological removal
PCB	polychlorinated biphenyls
PCEs	passenger car equivalents
PEEP	Pooled Emission Estimating Program
PERP	Portable Equipment Registration Program
PGA	peak ground accelerations
pH	hydrogen ion concentration
PLWTP	Point Loma Wastewater Treatment Plant
PM	particulate matter
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
Porter-Cologne	The Porter-Cologne Water Quality Act
PORTS	Physical Oceanographic Real Time System
POTWs	publicly owned treatment works
POWRP	Pomona Water Reclamation Plant
ppm	parts per million
ppt	parts per thousand
ppv	peak particle velocity
PRC	Public Resources Code
PS	public services
PSHA	probabilistic seismic hazards analyses
psu	practical salinity units
PV Shelf	Palos Verdes Shelf
RCP	reinforced concrete pipe
RCPG	Regional Comprehensive Plan and Guide

RCRA	Resource Conservation and Recovery Act
REC	recreation
RHA	Rivers and Harbors Act
RHNA	Regional Housing Needs Assessment
RMP	risk management plan
RMS	root mean square
RNA	regulated navigation area
ROD	record of decision
RRP	Release Response Plan
RSLs	Regional screening levels
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
Sanitation Districts	Sanitation Districts of Los Angeles County
SAR	Second Assessment Report
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCB	Southern California Bight
SC-DMMT	Southern California Dredge Material Management Team
SCE	Southern California Edison
SDAB	San Diego Air Basin
SEA	significant ecological area
SEMS	Standardized Emergency Management System
SIP	State Implementation Policy
SJCWRP	San Jose Creek Water Reclamation Plant
SJVAB	San Joaquin Valley Air Basin
SO_2	sulfur dioxide
SOC	employment, housing, socioeconomics, or environmental justice
SO_X	sulfur oxides
SP Shelf	San Pedro Shelf
SR-	State Route
SR-1	Pacific Coast Highway
SRA	source receptor area

SRF	state revolving fund
SSAB	Salton Sea Air Basin
SVOCs	semi-volatile organic compounds
SWF/LS	solid waste information system sites
SWP	State Water Project
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TBM	tunnel boring machine
TITP	Terminal Island Treatment Plant
TMDL	Total Maximum Daily Load
TNM	Traffic Noise Model Lookup program
TraPac	Trans Pacific Container Service Corporation
TRM	marine transportation and traffic
TRT	terrestrial transportation and traffic
TSDFs	treatment, storage, and disposal facilities
TWAS	thickened waste activated sludge
U.S.	United States
UBC	Uniform Building Code
USC	United States Code
USCG	U.S. Coast Guard
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
USSCS	United States Soil Conservation Service
UTL	utilities, service systems, and energy
UWMP	urban water management plan
V/C	volume-to-capacity
VdB	vibration decibels
VMT	vehicle miles traveled
VOC	volatile organic compounds
VSRP	Vessel Speed Reduction Program
VTS	Vessel Traffic Service
WAS	waste activated sludge

Water Replenishment District	Water Replenishment District of Southern California
waters of the U.S.	waters of the United States
WDRs	waste discharge requirements
WNWRP	Whittier Narrows Water Reclamation Plant
WRP	water reclamation plant
wtpd	wet tons per day
wtpy	wet tons per year
WWECP	Wet Weather Erosion Control Plans
WWII	World War II
ZID	zone of initial dilution

Chapter 28
RESPONSES TO COMMENTS

28.1 Introduction

The draft EIR/EIS was released to the public and regulatory agencies for a 60-day (EIR) and 57-day (EIS) review period ending April 10, 2012. See Section 1.8.1 for details of the distribution and public hearing process. The Sanitation Districts and Corps received 52 comment letters, oral comments, and comment cards on the draft EIR/EIS during the public review period. Table 28-1 presents a list of agencies, organizations, and individuals who commented on the draft EIR/EIS. Letters, public hearing transcripts, and comment cards are provided in Appendix 28-A.

Table 28-1. List of Comment Letters Received on the Clearwater Program Draft EIR/EIS

Commenter	Source of Comment	Date (2012)
Agencies		
A1	U.S. Department of Homeland Security, Federal Emergency Management Agency	February 14
A2	California Native American Heritage Commission	February 15
A3	City of Commerce	February 23
A4	City of Los Angeles, Department of Public Works, Bureau of Sanitation	March 1
A5	Port of Los Angeles (Public Hearing)	March 8
A6	U.S. Department of the Interior, Office of Environmental Policy and Compliance	March 16
A7	California State Lands Commission, Division of Environmental Planning and Management	March 23
A8	State of California, Governor's Office of Planning and Research, State Clearinghouse	March 27
A9	Central San Pedro Neighborhood Council	March 28
A10	City of Rancho Palos Verdes	April 9
A11	Port of Los Angeles	April 9
A12	U.S. Environmental Protection Agency	April 9
A13	U.S. Environmental Protection Agency	April 10
A14	California Department of Conservation, Division of Oil, Gas, and Geothermal Resources	April 10
A15	Northwest San Pedro Neighborhood Council	April 10
A16	South Coast Air Quality Management District	April 19
A17	City of South Gate	April 24
A18	State of California, Governor's Office of Planning and Research, State Clearinghouse	May 25
A19	State Water Resources Control Board	May 23
Public		
P1	ConocoPhillips Pipe Line Company	February 27
P2	Janet Gunter, Resident	March 7
P3	JoAnn Wysocki, Resident (Public Hearing)	March 7
P4	Kiran Magiawala, Resident (Public Hearing)	March 7
P5	Janet Gunter, Member, San Pedro Peninsula Homeowners United (Public Hearing)	March 7
P6	Lonna Calhoun, Resident (Public Hearing)	March 8
P7	John Winkler, Resident (Public Hearing)	March 8

Table 28-1 (Continued)

Commenter	Source of Comment	Date (2012)
Public		
P8	JoAnn Wysocki, Resident (Public Hearing)	March 8
P9	George Radovcich, Resident (Public Hearing)	March 8
P10	Cathy Beauregard, Resident (Public Hearing)	March 8
P11	Pat Rome, Resident (Public Hearing)	March 8
P12	Dave McCulloch, Resident (Public Hearing)	March 8
P13	Jody James, Board Member, San Pedro Peninsula Homeowners United (Public Hearing)	March 8
P14	Katy Watkins, Resident (Public Hearing)	March 8
P15	Jody James, Resident (Comment Card)	March 6–8
P16	Rosellen Trunnel (Comment Card)	March 6–8
P17	Robert Borden, Resident (Comment Card)	March 6–8
P18	Pat Rome, Harbor Pine Creek Homeowners Association (Comment Card)	March 6–8
P19	Katy Watkins, Resident (Comment Card)	March 6–8
P20	JoAnn Wysocki, Resident (Comment Card)	March 6–8
P21	Robert Stevens, Resident	March 9
P22	Laureen Vivian, Resident	March 10
P23	Jody James, Resident	March 11
P24	Kiran Magiawala, Resident	March 22
P25	Jeanne Lacombe, Resident	March 23
P26	Heal the Bay	April 4
P27	John Winkler, Miraflores Home Owner Association	Received April 9
P28	Mark Wells, Resident	April 9
P29	Lonna Calhoun, Resident	No Date
P30	Heal the Bay	April 10
P31	Sierra Club Angeles Chapter	April 10
P32	Southern California Edison	April 10
P33	JoAnn Wysocki, Resident (Comment Card)	April 10

28.2 Agencies

Commenter A1: U.S. Department of Homeland Security, Federal Emergency Management Agency Region IX – Gregor Blackburn, Chief, Floodplain Management and Insurance Branch

Commenter A1

U.S. Department of Homeland Security
FEMA Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

FEMA

February 14, 2012

Steven W. Highter
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601

Dear Mr. Highter:

This is in response to your request for comments on Public Notice of Availability regarding the Clearwater Program Draft Environmental Impact Report.

Please review the current effective countywide Flood Insurance Rate Maps (FIRMs) for the County of Los Angeles, Maps revised September 26, 2008. Please note that the County of Los Angeles, California is a participant in the National Flood Insurance Program (NFIP). The minimum, basic NFIP floodplain management building requirements are described in Vol. 44 Code of Federal Regulations (44 CFR), Sections 59 through 65.

A summary of these NFIP floodplain management building requirements are as follows:

- All buildings constructed within a riverine floodplain, (i.e., Flood Zones A, AO, AH, AE, and A1 through A30 as delineated on the FIRM), must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map. A1-1

- If the area of construction is located within a Regulatory Floodway as delineated on the FIRM, any ***development*** must not increase base flood elevation levels. **The term *development* means any man-made change to improved or unimproved real estate, including but not limited to buildings, other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials.** A hydrologic and hydraulic analysis must be performed *prior* to the start of development, and must demonstrate that the development would not cause any rise in base flood levels. No rise is permitted within regulatory floodways.

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Steven W. Highter
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- All buildings constructed within a coastal high hazard area, (any of the "V" Flood Zones as delineated on the FIRM), must be elevated on pilings and columns, so that the lowest horizontal structural member, (excluding the pilings and columns), is elevated to or above the base flood elevation level. In addition, the posts and pilings foundation and the structure attached thereto, is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.

- Upon completion of any development that changes existing Special Flood Hazard Areas, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision. In accordance with 44 CFR, Section 65.3, as soon as practicable, but not later than six months after such data becomes available, a community shall notify FEMA of the changes by submitting technical data for a flood map revision. To obtain copies of FEMA's Flood Map Revision Application Packages, please refer to the FEMA website at http://www.fema.gov/business/nfip/forms.shtm.

A1-1 cont.

Please Note:

Many NFIP participating communities have adopted floodplain management building requirements which are more restrictive than the minimum federal standards described in 44 CFR. Please contact the local community's floodplain manager for more information on local floodplain management building requirements. The Los Angeles County floodplain manager can be reached by calling George De La O, Senior Civil Engineer, at (626) 458-7155.

A1-2

If you have any questions or concerns, please do not hesitate to call Cynthia McKenzie of the Mitigation staff at (510) 627-7190.

Sincerely,

Gregor Blackburn, CFM, Branch Chief
Floodplain Management and Insurance Branch

cc:
George De La O, Senior Civil Engineer, Los Angeles County
Garret Tam Sing/Salomon Miranda, State of California, Department of Water Resources, Southern Region Office
Cynthia McKenzie, Senior NFIP Planner, DHS/FEMA Region IX
Alessandro Amaglio, Environmental Officer, DHS/FEMA Region

www.fema.gov

Response to Comment A1-1

The comment requests that the applicable Flood Insurance Rate Maps (FIRMs) and basic National Flood Insurance Program (NFIP) floodplain management building requirements be reviewed.

During the Preliminary Screening Analysis (Appendix 1-A of the draft EIR/EIS, HYD-9), it was determined that the only project elements located within 100-year or 500-year floodplains, as shown on the applicable FIRMs, would be the shaft sites. The only permanent structures located at these sites would be belowground access facilities. The permanent facilities would not increase base flood elevation levels. No habitable structures would be placed within floodplains. No buildings would be placed in a coastal high hazard area. Therefore, the NFIP floodplain management building requirements would not be applicable.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A1-2

This comment provides information about coordinating with the Los Angeles County floodplain manager to ensure that local floodplain management building requirements are met.

During the project design period for all project components, the project engineer will coordinate with the Los Angeles County floodplain manager's office and other local communities to ensure that the project features are designed in conformance with the local floodplain policies.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A2: California Native American Heritage Commission – Kay Sanchez, Program Analyst

Commenter A2

STATE OF CALIFORNIA Edmund G. Brown Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

February 15, 2012

Steven W. Highter
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, CA 90601

RE: SCH# 2008101074 Clearwater Program Master Facilities Plan; Los Angeles County

Dear Mr. Highter:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Completion (NOC) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5 minute quadrangle name, township, range and section required.**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached.**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

A2-1

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Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst
(916) 653-4040

cc: State Clearinghouse

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Highter S (File)

Native American Contact List
Los Angeles County
February 15, 2012

Ti'At Society/Inter-Tribal Council of Pimu
Cindi M. Alvitre, Chairwoman-Manisar
3098 Mace Avenue, Aapt. D Gabrielino
Costa Mesa, , CA 92626
calvitre@yahoo.com
(714) 504-2468 Cell

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490 Gabrielino Tongva
Bellflower , CA 90707
gtongva@verizon.net
562-761-6417 - voice
562-761-6417- fax

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Admin.
Private Address Gabrielino Tongva
,
tattnlaw@gmail.com
310-570-6567

Gabrielino-Tongva Tribe
Bernie Acuna
1875 Century Pk East #1500 Gabrielino
Los Angeles , CA 90067
(619) 294-6660-work
(310) 428-5690 - cell
(310) 587-0170 - FAX
bacuna1@gabrielinotribe.org

Gabrieleno/Tongva San Gabriel Band of Mission
Anthony Morales, Chairperson
PO Box 693 Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 286-1632
(626) 286-1758 - Home
(626) 483-3564 cell
(626) 286-1262 -FAX

Gabrielino-Tongva Tribe
Linda Candelaria, Chairwoman
1875 Century Park East, Suite 1500
Los Angeles , CA 90067 Gabrielino
lcandelaria1@gabrielinoTribe.org
626-676-1184- cell
(310) 587-0170 - FAX
760-904-6533-home

A2-1 cont

Gabrielino Tongva Nation
Sam Dunlap, Chairperson
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net

(909) 262-9351 - cell

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2008101074 Clearwater Program Master Facilities Plan; Los Angeles County.

Response to Comment A2-1

The comment provides general guidelines for compliance with historical resources requirements under the California Environmental Quality Act (CEQA) and recommends that a record search be conducted for the Clearwater Program.

As described in Sections 7.2.2 and 7.2.3 of the draft EIR/EIS, on March 2, March 3, and March 16, 2010, an archival records search was conducted at the South Central Coastal Information Center of the California Historical Resources Information System located at California State University, Fullerton, to identify previously recorded archeological cultural resources and historical buildings within a 0.5-mile radius of program and project elements. The records search included a review of federal, state, and local historic registers. Previous architectural historical resources surveys and inventories in the area were also consulted.

Pedestrian surveys were conducted at a number of program element sites including the San Jose Creek Water Reclamation Plant, Los Coyotes Water Reclamation Plant, Long Beach Water Reclamation Plant, and Joint Water Pollution Control Plant. In addition, the Sanitation Districts of Los Angeles County (Sanitation Districts) and U.S. Army Corps of Engineers (Corps), in coordination with the California State Historic Preservation Officer, will conduct pedestrian surveys at the appropriate project element sites to ensure compliance with CEQA, the National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA).

Through a letter dated March 16, 2010, ICF International (ICF), the environmental consulting firm responsible for the preparation of the EIR/EIS, contacted the Native American Heritage Commission (NAHC) on behalf of the Sanitation Districts and Corps requesting a Sacred Lands File review. The NAHC responded to ICF via facsimile on April 20, 2010, with a Native American contact list for Los Angeles County. The Sanitation Districts and Corps, in coordination with the California State Historic Preservation Officer, will contact tribal representatives on the contact list to ensure compliance with CEQA, NEPA, and NHPA.

Accidental discovery of buried cultural resources and human remains was addressed with Mitigation Measure CUL-2 in the draft EIR/EIS.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A3: City of Commerce – Alex Hamilton, Assistant Director of Community Development

Commenter A3

Highter, Steve

From: Alex Hamilton <AlexH@ci.commerce.ca.us>
Sent: Thursday, February 23, 2012 8:50 AM
To: Highter, Steve
Subject: FW: SAVE THE DATE - Meeting with US EPA - Integrated Planning Framework
Attachments: integrated_planning_framework%20_draft.pdf; EPA_Memo_on_Integrated_Municipal_Planning_10.27.11.pdf

Importance: High

Mr. Highter,

It was nice speaking with you today. Again, my compliments to your staff for putting together the Executive Summary for the EIR/EIS for the Clearwater Program. It is an excellent document that uses graphics very effectively to describe a project/program. A3-1

Here is the EPA effort I was speaking to you about.

Alex Hamilton
City of Commerce
Assistant Director of Community Development
2535 Commerce Way
Commerce, CA 90040
323 722-4805 ext 2330

Response to Comment A3-1

The comment provides positive feedback on the draft Executive Summary for the Clearwater Program draft Master Facilities Plan and draft EIR/EIS. (Note that an attachment to the comment addressed a topic unrelated to the Clearwater Program; therefore, this attachment was not included in the comments on the draft EIR/EIS.)

The Sanitation Districts of Los Angeles County and the U.S. Army Corps of Engineers appreciate the positive feedback on the draft Executive Summary. However, the comment does not address the EIR/EIS, so no response is necessary. The comment will be provided to the decision makers for their consideration.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A4: City of Los Angeles, Department of Public Works, Bureau of Sanitation – Ali Poosti, Acting Division Manager, Wastewater Engineering Services Division

Commenter A4

CITY OF LOS ANGELES
CALIFORNIA

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March 1, 2012

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WASTEWATER ENGINEERING SERVICES DIV
2714 MEDIA CENTER DRIVE
LOS ANGELES, CA 90065
FAX: (323) 342-6210 OR 342-6211

Steven W. Highter, Supervising Engineer, Planning Section
SANITATION DISTRICTS OF LOS ANGELES COUNTY
1955 Workman Mill Road
Whittier, CA 90601

File: SC.CE.

Dear Mr. Highter:

Clearwater Program Master Facilities Plan – Draft EIR

This is in response to your January 26, 2012 letter requesting wastewater service information for the proposed project to develop a long-range Master Facilities Plan for the Joint Outfall System serving unincorporated areas in Los Angeles County. The Bureau of Sanitation, Wastewater Engineering Services Division (WESD) has reviewed the request and found the project to be related to outfall systems and treatment plants of the Los Angeles County Sanitation Districts only. A4-1

Based on the project description, we have determined the project is unrelated to our sewers and therefore do not have sufficient detail to offer an analysis at this time. Should the project description change, please continue to send us information so that we may determine if a sewer assessment is required in the future.

If you have any questions, please call Kwasi Berko of my staff at (323) 342-1562.

Sincerely,

Ali Poosti, Acting Division Manager
Wastewater Engineering Services Division
Bureau of Sanitation

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DOC # 2180543

Highter S

c: Kosta Kaporis, BOS
Daniel Hackney, BOS
Rowena Lau, BOS

Div Files\SCAR\CEQA Review\Final Response Ltrs\Clearwater Program Master Facilities Plan – Draft EIR

Response to Comment A4-1

The comment states that the City of Los Angeles Bureau of Sanitation has no comments on the draft EIR/EIS as described because the Clearwater Program does not fall within its jurisdiction.

No response is necessary. However, the comment will be provided to the decision makers for their consideration.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A5: Port of Los Angeles – Augie Bezmalinovich (March 8, 2012, Public Hearing at the Crowne Plaza Los Angeles Harbor Hotel, San Pedro, California)

Commenter A5

21 Good evening, everyone. I'm Augie
22 Bezmalinovich, and I'm representing the Port of
23 Los Angeles on this matter. And the Port of Los Angeles
24 would like to go on record that if a tunnel and ocean
25 alignment selected by the Sanitation Districts'

A5-1

California Deposition Reporters Page: 28

1 construction of a new ocean discharge system runs under
2 the Port of Los Angeles, that, one, the construction
3 access portal cannot be situated on the Trapac Terminal
4 due to the disruptions and expense it would cause, and A5-1 cont.
5 that any construction by this project would be
6 coordinated with the Port of Los Angeles, such that port
7 operations would not be disturbed.
8 And two, if the Sanitation Districts'
9 construction of new ocean discharge system runs under
10 the Port of Los Angeles, the Sanitation Districts would A5-2
11 coordinate with the Terminal Island Treatment Plant and
12 the Port of Los Angeles to explore the possibility of
13 having the Terminal Island Treatment Plant discharge
14 system tied into the Sanitation Districts' system, if
15 needed.
16 Thank you very much. Have a nice day.
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25

California Deposition Reporters Page: 29

Response to Comment A5-1

The comment states that the Trans Pacific Container Service Corporation (TraPac) terminal area would not be available for use as shaft site due to the disruption and expenses it would cause. The comment also requests close coordination with the Port of Los Angeles if the project were to be aligned through the port.

Alternative 4 (the recommended alternative) would not be aligned through the Port of Los Angeles. If, however, either Alternative 1 or Alternative 2 were selected for implementation, the Sanitation Districts of Los Angeles County (Sanitation Districts) would closely coordinate with port staff during the final design and construction phases to address concerns raised by this comment and ensure that port operations would not be disrupted. Based on this comment, if either Alternative 1 or 2 were selected, the Sanitation Districts would need to either eliminate or relocate the proposed TraPac shaft site. If new significant environmental impacts resulted from the access shaft relocation, they would have to be addressed in a subsequent environmental document.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A5-2

The comment requests that the Sanitation Districts explore the possibility of allowing the Terminal Island Water Reclamation Plant to discharge into a new Sanitation Districts' ocean discharge system if the new ocean discharge system were aligned through the Port of Los Angeles.

As shown in Table 4 in Appendix 1-B of the draft EIR/EIS, from early 2006 to late 2011, the Sanitation Districts met with the Port of Los Angeles and/or the City of Los Angeles Bureau of Sanitation on 10 occasions to coordinate the potential construction of a Sanitation Districts' ocean discharge system aligned through the Port of Los Angeles. The possibility of allowing the Terminal Island Water Reclamation Plant to discharge into a new Sanitation Districts' ocean discharge system was discussed at several of these coordination meetings. Alternative 4, which is the recommended alternative identified in the draft EIR/EIS, is not aligned through the Port of Los Angeles. If, however, the recommended alternative were to become Alternative 1 or Alternative 2, the Sanitation Districts would continue to explore this possibility with the Port of Los Angeles and the City of Los Angeles Bureau of Sanitation.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A6: U.S. Department of the Interior, Office of Environmental Policy and Compliance – Patricia Sanderson Port, Regional Environmental Officer

Commenter A6

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Pacific Southwest Region
333 Bush Street, Suite 515
San Francisco, CA 94104

IN REPLY REFER TO
(ER 12/001)

Filed Electronically

16 March 2012

U.S. Army Corps of Engineers, Los Angeles District
Regulatory Branch
915 Wilshire Boulevard
Los Angeles, CA 90017
Contact: Aaron O. Allen, Ph.D.
Chief, North Coast Branch
(213) 452-3290
Aaron.O.Allen@usace.army.mil

Subject: Review of the Draft Environmental Impact Statement (DEIS) for the Proposed Clearwater Program, Los Angeles County, CA

Dear Mr. Allen:

The Department of the Interior has received and reviewed the review of the Draft Environmental Impact Statement (DEIS) for the Proposed Clearwater Program, Los Angeles County, CA and has no comments to offer. A6-1

Thank you for the opportunity to review this project.

Sincerely,

Patricia Sanderson Port

Patricia Sanderson Port
Regional Environmental Officer

cc:
Director, OEPC

Response to Comment A6-1

The comment states that the U.S. Department of Interior has no comments on the draft EIR/EIS.

No response is necessary. However, the comment will be provided to the decision makers for their consideration.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A7: California State Lands Commission – Cy R. Oggins, Chief, Division of Environmental Planning and Management

Commenter A7

STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

CURTIS L. FOSSUM, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
California Relay Service From TDD Phone 1-800-735-2929
from Voice Phone 1-800-735-2922

Contact Phone: **(916) 574-1900**
Contact FAX: **(916) 574-1885**

March 23, 2012

File Ref: SCH #2008101074

Mr. Steven W. Highter
Sanitation Districts of Los Angeles County
Facilities Planning Department
1955 Workman Mill Road
Whittier, CA 90601

Subject: Draft Environmental Impact Report/Draft Environmental Impact Statement (DEIR/DEIS) for the Clearwater Program, Los Angeles County

Dear Mr. Highter:

The California State Lands Commission (CSLC) staff has reviewed the subject DEIR/DEIS for the Clearwater Program (Program), which is being prepared by the Sanitation Districts of Los Angeles County (Districts) and the U.S. Army Corps of Engineers (ACOE). The Districts, as the public agencies proposing to carry out a Program, is the Lead Agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The ACOE is the Lead Agency under the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321 et seq.). The CSLC will act as a trustee agency because of its trust responsibility for projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters. Additionally, if the Program involves work on sovereign lands, the CSLC will act as a responsible agency.

CSLC Jurisdiction and Public Trust Lands A7-1

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership

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Steven W. Highter Page 2 March 23, 2012

extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. On navigable non-tidal waterways, including lakes, the State holds fee ownership of the bed of the waterway landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark, except where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

The Districts, as part of developing the Joint Outfall System (JOS) Master Facilities Plan, have identified the need for new facilities and upgrades that are required to accommodate projected future conditions within the JOS service area, inclusive of a new tunnel and ocean outfall to convey effluent from the Districts' upland treatment plant to the ocean. At the Program level, CSLC staff does not have enough detail to determine whether the Program components or potential alternatives would involve sovereign lands. However, the Districts have evaluated, at the project level in the DEIR/DEIS, four feasible project-specific ocean discharge system alignment alternatives. All of the alternatives would require rehabilitation of the existing ocean outfalls located in Alternative 4. Based on the information provided in the DEIR/DEIS and a review of CSLC records, Alternatives 1, 2, and 3 involve granted lands, while Alternative 4 involves ungranted sovereign lands under the jurisdiction of the CSLC, as follows: A7-1 cont

- Alternative 1 would be located partially within lands the State patented as Tideland Locations 57 and 152 and partially located within lands the State legislatively granted to the city of Los Angeles pursuant to Chapters 656, Statutes of 1911, and as amended, no minerals reserved.
- Alternative 2 would be located partially within lands the State patented as Tideland Locations 57 and 152 and partially located within lands the State legislatively granted to the City pursuant to Chapters 656, Statutes of 1911 and Chapters 651, Statutes of 1929 and as amended, no minerals reserved.
- Alternative 3 would be located within lands the State legislatively granted to the City pursuant to Chapters 656, Statutes of 1911 and Chapters 651, Statutes of 1929 and as amended, no minerals reserved.
- Alternative 4 would be covered under CSLC Lease No. PRC 251.9 to the Los Angeles Sanitation District for the life of the structure and also extends into lands the State legislatively granted to the City pursuant to Chapters 443, Statutes of 1951, and as amended, no mineral reserved.

Proposed Alternatives 1, 2, and 3 occupy lands managed by the City of Los Angeles and, as such, no new authorization would be required from the CSLC for those alignments. However, because each of the alternatives would include rehabilitation of the existing ocean outfalls located in Alternative 4, which occupies land covered under CSLC Lease No. PRC 251.9, an amendment to the existing lease would be required regardless of the alternative selected by the Districts for implementation. The Los Angeles Sanitation District should contact the CSLC's Land Management Division through the contact listed at the end of this letter, for additional information regarding A7-2

the application requirements for a lease amendment. Additionally, other regulatory agencies will need to provide authorization for use. A7-2 cont

Program/Project Description

The Program is a comprehensive planning effort undertaken by the Districts. Its purpose is to develop a long-range Master Facilities Plan (MFP) for the JOS, a regional wastewater management system serving over five million people in 73 cities and unincorporated areas of Los Angeles County. The Program's MFP includes an evaluation of infrastructure needs and will serve to guide the management and development of the JOS through the year 2050.

The Program has the following objectives:

- Provide adequate system capacity to meet the needs of the growing population
- Provide for overall system reliability by allowing for the inspection, maintenance, repair, and replacement of aging infrastructure
- Provide support for emerging recycled water reuse and biosolids beneficial use opportunities
- Provide a long-term solution for meeting water quality requirements set forth by regulatory agencies

CSLC staff understands that the components considered in the Program DEIR/DEIS include five areas for which conceptual options were developed. These include: A7-3

- Wastewater Conveyance and Treatment
- WRP Effluent Management
- Solids Processing
- Biosolids Management
- Joint Water Pollution Control Plant (JWPCP) Effluent Management

Screening at the Program level identified one feasible option for each of four of the five Program component areas. Analysis of the fifth Program component area (JWPCP Effluent Management) resulted in four ranked feasible project alternatives for the ocean discharge system. The four feasible Program alternatives were paired with each of the four ranked feasible project alternatives to produce four ranked feasible alternatives for the Program. The highest ranked of these alternatives (Alternative 4) was selected as the recommended plan in the MFP and identified as the recommended alternative in the DEIR/DEIS.

The JWPCP Ocean Discharge System project (Project) alternatives evaluated were based on the fifth Program component, JWPCP Effluent Management, which includes rehabilitation of the existing ocean outfalls. The Project is composed of three functional categories: (1) tunnel alignment (onshore and offshore), (2) shaft site (JWPCP and intermediate), and (3) riser and diffuser area.

Currently, the Districts rely on two onshore tunnels and four offshore ocean outfall structures to convey effluent from the JWPCP, in the city of Carson, to the Pacific Ocean. The Project purpose and needs are to inspect and upgrade the aging ocean discharge system, to provide sufficient capacity in the JOS to accommodate the estimated 2050 peak wastewater flows, and to comply with all applicable water quality standards, including regulations prohibiting sewer overflows. To meet these needs, the Project evaluates alternatives to both modifying the existing ocean discharge system and constructing a new ocean discharge system. All four of the Project alternatives include rehabilitation to the existing offshore discharge area, which is under the jurisdiction of the CSLC. Alternative 4, which would modify the existing ocean discharge system, was the highest-ranked feasible alternative and is the recommended Project in the DEIR/DEIS. A7-3 cont.

Environmental Review

CSLC staff requests that the Districts consider the following comments on the DEIR/DEIS.

Alternatives

1. The Alternatives listed under the Water Reclamation Plant (WRP) Effluent Management component (Figure 3-1) included the "All Reuse – No Surface Discharge" Alternative, which was subsequently eliminated from consideration during the screening process as described in the Draft Master Facilities Plan. Recent progress has been made in regards to water reuse technology. The DEIR/DEIS should analyze treating wastewater to drinking water standards as a water supply alternative. For example, Groundwater Replenishment Systems (GWRSs) significantly lower the energy currently required to import water and desalinate seawater, supply a reliable water source, and also decrease the amount of wastewater discharged in the Pacific Ocean. This technology is currently being used by the Orange County Water District, which currently produces 70 million gallons per day of potable water, and is being considered by the Padre Dam Water District in San Diego County. As the impacts of coastal wastewater discharges into tidelands are of concern to the CSLC, staff recommends that any water reuse technology that could decrease discharges into the ocean be seriously considered during the CEQA process. A7-4

Climate Change

2. Sea Level Rise: The DEIR/DEIS should also consider the effects of sea level rise on all resource categories potentially affected by the proposed Project. At its meeting on December 17, 2009, the CSLC approved the recommendations made in a previously requested staff report, "A Report on Sea Level Rise Preparedness" (Report), which assessed the degree to which the CSLC's grantees and lessees have considered the eventual effects of sea level rise on facilities located within the CSLC's jurisdiction. (The Report can be found on the A7-5

CSLC's website, http://www.slc.ca.gov). One of the Report's recommendations directs CSLC staff to consider the effects of sea level rise on hydrology, soils, geology, transportation, recreation, and other resource categories in all environmental determinations associated with CSLC leases. Because it is reasonably foreseeable that long-term coastal facilities will eventually have to operate under higher sea level conditions, the eventual effects of the facilities' operations under those conditions are of interest to the CSLC; staff therefore recommends these effects be considered in the Program and Project's CEQA analysis. A7-6 cont.

Cultural Resources

3. CSLC staff is concerned that the DEIR/DEIS does not present sufficient evidence in regards to the potential for archaeological resources within some of the Program and Project areas due to the lack of a complete and comprehensive pedestrian surveys of the areas. Several areas have only been "partially" surveyed. Complete surveys of all areas within granted and sovereign land where construction may occur should be conducted prior to proposing mitigation relating to unanticipated discovery. A7-8

   Furthermore, the DEIR/DEIS should mention that the title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the CSLC. The recovery of objects from any submerged archaeological site or shipwreck may require a salvage permit under Public Resources Code section 6309. On statutorily granted tide and submerged lands, a permit may be issued only after consultation with the local grantee and a determination by the CSLC that the proposed salvage operation is not inconsistent with the purposes of the legislative grant. A7-7

Marine Environment

4. Table 13-11 should note the CSLC under "Rehabilitation of the Existing Ocean Outfalls," as the existing structure is currently under lease with CSLC and any rehabilitation activity may require an amendment to that lease. A7-8

5. Mitigation Measure MAR-1a states that "During riser and diffuser construction, analyses of contaminant concentrations ... in waters near the dredging operations will be required if the contaminant levels in the dredged sediments are known to be elevated and represent a potential risk to beneficial uses." The measure does not specify when or how often the analyses would occur. In addition, a lead agency may not defer the formulation of a mitigation measure to other agencies; lead agencies must do all that is feasible on their part to address significant impacts even where a subsequent permit from another agency is necessary. While the requirements contained in permits issued by the various regulatory agencies mentioned may ultimately provide a basis to conclude that the A7-9

particular agency's permitting requirements were met, such a conclusion is not, by itself, a basis to conclude that all project-related impacts on those resources are mitigated to below a level of significance under CEQA. Rather, the lead agency has the responsibility to comply with CEQA's substantive mandate to mitigate all project-related impacts to the extent feasible, not simply pass the responsibility to a responsible agency with more limited regulatory and statutory requirements. The DEIR/DEIS has stated that the Project components have been designed to meet the receiving water standards of the California Ocean Plan as well as the requirements of the JWPCP's existing Regional Water Quality Control Board Waste Discharge Request order and National Pollutant Discharge Elimination System permit. CSLC suggests that these documents could be used to improve the Districts' ability to monitor and enforce this mitigation measure A7-9 cont.

Thank you for the opportunity to comment on the DEIR/DEIS for the Program and Project. As a responsible and trustee Agency, the CSLC will need to rely on the Final DEIR/DEIS for the issuance of any amended lease as specified above and, therefore, we request that you consider our comments prior to adoption of the DEIR/DEIS. Please send additional information on the Program/Project to the CSLC staff listed below as plans become finalized.

In addition, please send copies of future Program and Project-related documents, including an electronic copy of the Final EIR/EIS, CEQA Findings, and if applicable, Statement of Overriding Considerations, when they become available, and refer questions concerning environmental review to Cynthia Herzog, Environmental Scientist, at (916) 574-1310 or via e-mail at Cynthia.Herzog@slc.ca.gov. For questions concerning archaeological or historic resources under CSLC jurisdiction, please contact Senior Staff Counsel Pam Griggs at (916) 574-1854 or via email at Pamela.Griggs@slc.ca.gov. For questions concerning CSLC leasing jurisdiction, please contact Michelle Andersen, Public Land Management Specialist at (916) 574-0200, or via email at Michelle.Andersen@slc.ca.gov. A7-10

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
Michelle Andersen, LMD, CSLC
Cynthia Herzog, DEPM, CSLC

Response to Comment A7-1

The comment identifies the California State Lands Commission (CSLC) as a trustee agency under the California Environmental Quality Act (CEQA) for the Clearwater Program EIR/EIS because of its trust responsibility for projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters.

The Sanitation Districts of Los Angeles County (Sanitation Districts), the lead agency under CEQA, agree with the designation of the CSLC as a trustee agency. The CSLC is also a cooperating agency under the National Environmental Policy Act (NEPA), with the U.S. Army Corps of Engineers (Corps) as the federal lead agency.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A7-2

The comment requests that the Sanitation Districts apply for an amendment to existing CSLC Lease No. PRC 251.9 prior to performing the rehabilitation of the existing ocean outfalls.

Subsequent telephone discussions on June 7, 2012, and June 8, 2012, between the Sanitation Districts and CSLC staff concluded that maintenance of the existing ocean outfalls is explicitly allowed under the existing lease, so an amendment is not necessary. In a letter dated July 27, 2012, the CSLC affirmed that no additional authorization from the CSLC is required at this time because the rehabilitation of the existing ocean outfalls would be consistent with repair and maintenance, as authorized by CSLC Lease No. PRC 251.9. The letter is included in the final EIR/EIS in Appendix 28-A.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A7-3

The comment describes the CSLC's understanding of the project alternatives.

The Sanitation Districts and the Corps concur with the CSLC's description of the project alternatives. No response is necessary. However, the comment will be provided to the decision makers for their consideration.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A7-4

The comment requests that the EIR/EIS consider an alternative that evaluates treating wastewater to drinking water standards.

The Sanitation Districts and Corps recognize that recycled water is an essential regional resource, which is why one of the four primary objectives of the Clearwater Program is to "provide support for emerging recycled water reuse…opportunities." As described in Chapter 1 of the draft Master Facilities Plan (MFP), the Sanitation Districts have pioneered water reclamation and reuse in Southern California, beginning with the completion of the Whittier Narrows Water Reclamation Plant in 1962. The Sanitation Districts now own and operate 10 water reclamation plants (WRPs) that produce approximately 165 million gallons per day (MGD) of high-quality recycled water. Approximately half of the recycled

water is reused at over 640 sites throughout Los Angeles County. Eight of these WRPs, located in the Joint Outfall System (JOS), intercept and treat the more reclaimable wastewater flow that would instead be treated at the Joint Water Pollution Control Plant (JWPCP) and discharged to the ocean. The tertiary-treated effluent produced at the JOS WRPs essentially meets drinking water standards and is used for groundwater replenishment (i.e., indirect potable reuse) and other important uses, including industrial, commercial, and recreational applications; habitat maintenance; and agricultural and landscape irrigation.

The draft EIR/EIS analyzed a reasonable range of alternatives that feasibly meet the project objectives and purpose and need. These final feasible alternatives were determined through the alternatives analysis process presented in Chapter 6 of the draft MFP and summarized in Chapter 3 of the draft EIR/EIS. Section 6.2.5.1 of the draft MFP, which provided an analysis of options/alternatives for WRP effluent management, determined that complete reuse at the upstream WRPs would not be feasible. The draft MFP also explored the possibility of providing advanced treatment at the JWPCP. Specifically, Section 6.2.6 of the draft MFP analyzed the feasibility of diverting enough flow from the existing JWPCP ocean discharge system to allow for the inspection/repair of each of the existing tunnels (JE 4 Reduced Ocean Discharge). To accommodate reuse and storage of the required 200 MGD of diverted flow, advanced treatment (e.g., microfiltration/reverse osmosis, ultraviolet disinfection, and advanced oxidation) would be necessary. This reduced ocean discharge option specifically contemplated diversion of this advanced-treated effluent to the Central, West Coast, and/or Main San Gabriel Basins for groundwater recharge (i.e., indirect potable reuse). However, the reduced ocean discharge option was determined to be not viable for reasons presented in Section 6.2.6.5 of the draft MFP and thus was not further evaluated in the draft EIR/EIS.

Chapter 11 of the draft EIR/EIS stated that the Sanitation Districts' Clearwater Program is consistent with the State Water Resources Control Board Recycled Water Policy to provide recycled water to purveyors in the region. This policy mandates significantly increasing the use of recycled water in California and replacing potable water with recycled water as much as possible by 2030. These mandates are achieved through a collaborative partnership among multiple entities, including the Sanitation Districts and water purveyors (e.g., city, water company, or water agency). State duplication of service laws requires the Sanitation Districts to work with local water purveyors to provide recycled water in areas with domestic service. The necessary distribution infrastructure (purple pipes) to convey recycled water to the end user would also need to be constructed or expanded by the water purveyor. The Sanitation Districts will continue to consider all feasible projects that would expand the use of recycled water in Los Angeles County to help the region meet the recycled water policy mandates.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A7-5

The comment requests that the EIR/EIS consider the effects of sea-level rise on the resources potentially affected by the Clearwater Program. The comment references a CSLC policy related to the eventual effects of sea-level rise on facilities located within its jurisdiction. The comment mentions a number of technical and legal issues under CEQA.

Under CEQA, the environmental analysis must consider the impacts of the project on the environment, but not the impacts of the environment on the project. This requirement was recently upheld in the Ballona Wetlands Land Trust et al. v. City of Los Angeles (2001) decision (201 Cal.App.4th 455). The Ballona Wetlands ruling is the most recent case related to "CEQA in reverse," which holds that CEQA is concerned with the impact of the project on the environment, not vice-versa. Therefore, the impacts of sea-level rise on the project are outside the requirements of CEQA.

NEPA has draft guidance on consideration of the effects of climate change (including sea-level rise). In the draft guidance, the Council on Environmental Quality recommends that climate change effects (e.g., increasing sea levels) should be considered in the analysis of projects that are designed for long-term utility within the project's timeframe. However, this is currently only draft guidance, still undergoing the review process.

Under both CEQA and NEPA, there is a requirement to look at the cumulative impacts of the project and other projects on the environment. Cumulative impact analyses were included in the draft EIR/EIS, as documented in Chapter 21. For areas within the jurisdiction of the CSLC, the cumulative impacts on the marine environment are most relevant, which are found in Section 21.2.10 of the draft EIR/EIS.

The project would not be expected to affect sea-level rise, except as a secondary effect from the project's incremental contribution to greenhouse gas emissions. This topic was discussed in Chapter 9 of the draft EIR/EIS.

Under the recommended alternative (Alternative 4), sea-level rise would have no impact on the tunnel because it would be located below ground and pressurized. For any future effluent pumping plant improvements at the JWPCP, the analysis of the effects of sea-level rise on the performance of the pumps would be considered during the design of these improvements.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A7-6

The comment recommends that complete surveys of all areas within granted and sovereign land where construction may occur be conducted prior to proposing mitigation relating to unanticipated discovery.

The draft EIR/EIS provided both project-level and program-level environmental analyses. As presented in Chapter 7 of the draft EIR/EIS, the cultural analyses of project elements included both record searches and pedestrian surveys and provided mitigation measures to meet the requirements of CEQA and NEPA. For program elements, that is, portions of the Clearwater Program that will be implemented in the future but for which actual construction locations are unknown, record searches were conducted of the general locations, and mitigation was included. This mitigation includes the requirements for additional cultural resources analyses of these sites, including conducting pedestrian surveys, once these elements are better defined and more information is available regarding the limits of disturbance. In accordance with CEQA, the analyses will be documented in the appropriate supplemental environmental documents.

Prior to issuance of Corps' permits and construction, the Sanitation Districts and Corps will ensure compliance with cultural requirements under CEQA and NEPA and, in consultation with the California State Historic Preservation Officer, with the requirements of Section 106 of the National Historic Preservation Act. This will include conducting pedestrian surveys of appropriate project sites.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A7-7

The comment requests that the draft EIR/EIS state that the title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the state and under the jurisdiction of the CSLC. The comment also indicates that a salvage permit may be required for the recovery of objects from any submerged archaeological site or shipwreck.

The need for CSLC permits prior to undertaking salvage or recovery operations is noted. However, no salvage or recovery operations of submerged archaeological sites or shipwrecks are anticipated with the implementation of the recommended alternative (Alternative 4). Section 7.2.1.6, second paragraph, is revised in the final EIR/EIS as follows:

> Shipwrecks off the Southern California coast, in varying states of preservation, represent hundreds of years of history because of the lengthy Southern Californian coast historical maritime period. It has been estimated that there are "upwards of 100 wrecks in the harbors [Los Angeles and Long Beach], which vary in age from significant old wrecks to culturally insignificant modern wrecks" (Weinman and Stickel 1978:76). Approximately 415 vessel losses have been reported within Los Angeles County by the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), and 156 vessel losses have been identified within Los Angeles County by the California State Lands Commission (CSLC) database (see Section 7.4.1.2 for more information on each of these databases). Only a small fraction of these wrecks has ever been located. A number of reported vessels lost off Los Angeles County are reported to be in excess of 400 feet in length and are primarily freighters and tankers (CSLC 2011). <u>Title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the state and under the jurisdiction of the CSLC.</u>

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A7-8

The comment indicates that the Sanitation Districts may need an amendment to existing CSLC Lease No. PRC 251.9 prior to performing the rehabilitation of the existing ocean outfalls.

See Response to Comment A7-2.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A7-9

The comment states that the draft EIR/EIS lacks sufficient detail regarding the analyses of sediment contaminant testing during dredging conducted as part of riser and diffuser construction. The comment also emphasizes that the lead agency is responsible under CEQA to mitigate all project-related impacts to the extent feasible and not defer this responsibility to a responsible agency through its permitting authority. Finally, the comment suggests that existing documents that regulate ocean discharge be used to monitor and enforce this mitigation measure.

Sediment testing is required for the placement of dredged materials within the aquatic environment. A full suite of sediment testing entails four tiers: (1) review of data from past sediment tests, (2) testing for grain size and bulk chemistry, (3) testing for toxicity and bioaccumulation, and (4) testing for sub-lethal effects. Agencies that directly regulate placement of dredged material within the aquatic environment require Tiers 1 and 2 at a minimum, and may require Tiers 3 and 4 as needed. Repeated testing is not required once regulatory agencies have reviewed and approved the placement of dredged materials within the marine environment.

The Sanitation Districts and Corps are aware that sediment testing will be required if project elements entail placement of dredged material within the marine environment. However, as described in

Section 7.2.5.4 of the draft MFP, Section 3.3.2.3 of the draft EIR/EIS, and the draft Executive Summary, rehabilitation of the existing ocean outfalls would include only re-ballasting, joint repairs, and cathodic protection. Rehabilitation of the existing ocean outfalls would not require mechanical dredging or removal of large quantities of sediment. Joint repairs would require the temporary removal of sediment and ballast rock to fully expose the joint being repaired. A team of divers would remove the ballast rock and hand-shovel approximately 2 cubic yards of sediment from each joint. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. Cathodic protection would also be restored or added where necessary. It is estimated that approximately 10 to 40 joints would require repair, resulting in the hand removal of approximately 20 to 80 cubic yards of sediment. Therefore, because no mechanical dredging would be associated with Alternative 4 (the recommended alternative), the rehabilitation work would entail removal of *de minimis* quantities of sediment.

Section 3.3.2.3, under Existing Ocean Outfalls, second paragraph, is revised in the final EIR/EIS as follows:

> Alternatives 1 through 4 (Project) would include improvements to the existing ocean outfalls, such as joint repairs and re-ballasting. The re-ballasting work would occur on the existing 72-, 90- and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A small derrick barge would be used to place the ballast rock around the outfalls and support the joint repair work. Joint repairs would involve temporarily removing some of the existing ballast rock from around the outfall to fully expose the joint being repaired. A team of divers would repair an estimated 10 to 40 joints and hand-shovel approximately 2 cubic yards of sediment from each joint. Mechanical dredging would not be required. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. ~~c~~Cathodic protection would also be restored or added where necessary. The marine vessels required for this work are listed in Table 3-10. The majority of the construction work would be based on one 10-hour shift per day, 5 days per week. It is estimated that approximately eight to ten construction workers would be needed for the rehabilitation work. Joint repairs and transport of construction workers would require a work vessel and crew vessel operating one daily round-trip for approximately 1 month, which would most likely deploy from the Port of Los Angeles. All of the work including mobilization, construction, and demobilization would take approximately 9 months.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A7-10

The comment provides information about future coordination with the CSLC.

The Sanitation Districts and Corps will coordinate with the CSLC as requested.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A8: State of California, Governor's Office of Planning and Research – Scott Morgan, Director, State Clearinghouse

Commenter A8

STATE OF CALIFORNIA
GOVERNOR'S OFFICE of PLANNING AND RESEARCH

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

March 27, 2012

Steven W. Highter
Los Angeles County
Sanitation Districts
1955 Workman Mill Road
Whittier, CA 90601

Subject: Clearwater Program Master Facilities Plan
SCH#: 2008101074

Dear Steven W. Highter:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on March 26, 2012, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly.

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

A8-1

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Scott Morgan
Director, State Clearinghouse

REC'D LACSD
DOC # Highter S

Enclosures
cc: Resources Agency

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

APR 2 '12 AM 11:08

Response to Comment A8-1

The comment acknowledges that the State Clearinghouse distributed the draft EIR/EIS to affected state agencies. Copies of comment letters from the Native American Heritage Commission and the California State Lands Commission were also provided.

The comment does not address the draft EIR/EIS, so no response is necessary. However, the comment will be provided to the decision makers for their consideration. The attached letters from the Native American Heritage Commission and the California State Lands Commission are included in these Responses to Comments as Commenters A2 and A7, respectively. Therefore, the attached letters are not included in this response.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A9: Central San Pedro Neighborhood Council – Linda Alexander, President

Commenter A9

Central San Pedro Neighborhood Council

Linda Alexander
President

Frank Anderson
Vice President

Scott Gray
Secretary

Kali Merideth
Treasurer

March 28, 2012

Steven W. Highter
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, CA 90601

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
U.S. Army Corps of Engineers, Los Angeles District
Regulatory Branch
915 Wilshire Boulevard
Los Angeles, CA90017

Gentlemen,

The Central San Pedro Neighborhood requests that the public comment period for the Clearwater Program be extended by one month to May 10, 2012. The issues involved are complex and require more extensive review by our Council. Our meeting schedule precludes a vote of our Governing Board to take a position before May. A9-1

Thank you for your consideration.

Sincerely,

Linda Alexander

Linda Alexander
President

cc: Ken Melendez, Co-Chair, Port Community Advisory Committee
Annette McDonald, Board Member Central San Pedro Neighborhood Council

RECD LACSD
APR 2 '12 AM 11:47

DOC # Highter S

1840 S. Gaffey Street, Box 212, San Pedro, CA 90731 • 310-832-0363 • www.centralsanpedro.org

Response to Comment A9-1

The comment requests an extension of the comment period for the draft EIR/EIS.

The comment periods for the draft EIR and draft EIS were 60 and 57 days, respectively, which exceeded the 45-day requirements for both the California Environmental Quality Act and the National Environmental Policy Act. On April 5, 2012, the project manager for the Clearwater Program informed the commenter via telephone that, although the comment period would not be extended, the Sanitation Districts of Los Angeles County and the U.S. Army Corps of Engineers would respond to late comments if received within a reasonable timeframe that would not delay preparation of the final EIR/EIS. No further comments were received from this party.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A10: City of Rancho Palos Verdes – Kit Fox, Senior Administrative Analyst

Commenter A10

CITY OF RANCHO PALOS VERDES
CITY MANAGER'S OFFICE
ADMINISTRATION

9 April 2012

Steven W. Highter
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Rd.
Whittier, CA 90601

Dr. Aaron O. Allen
U.S. Army Corps of Engineers, Los Angeles District
Regulatory Division, Ventura Field Office
2151 Alessandro Dr., Ste. 110
Ventura, CA 93001

SUBJECT: Comments on the Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) for the Clearwater Program

Dear Mr. Highter and Dr. Allen:

The City of Rancho Palos Verdes appreciates the opportunity to comment upon the Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) for the above-mentioned project. The City respectfully offers the following comments on the content and analysis of the DEIS/EIR for the proposed project:

1. A small portion of the proposed tunnel alignment for Alternative 4 would appear to traverse the public right-of-way of Western Avenue within the jurisdiction of the City of Rancho Palos Verdes (i.e., roughly between Crestwood Street and Summerland Street). As such, Table 1-3 in Section 1.6 "Relationship to Existing Plans" should include a reference to the Rancho Palos Verdes General Plan, which may be reviewed on the City's website at the following link: A10-1

   http://www.palosverdes.com/rpv/planning/General_Plan_EIR/index.cfm

2. The City has the following concerns regarding the construction of the proposed tunnel exit shaft at Royal Palms County Beach for Alternative 4: A10-2

   a. The proposed shaft site is located quite close to a recent landslide at White Point in San Pedro (i.e., the City of Los Angeles). In addition, the

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Steven W. Highter and Dr. Aaron O. Allen
9 April 2012
Page 2

soils of the Palos Verdes Peninsula may be generally characterized as being susceptible to large-scale land movement, such as the on-going Portuguese Bend Landslide and the failure of a portion of the golf course at the Trump National Golf Club in 1999. Chapter 8 "Geology, Soils and Mineral Resources" should address not only the suitability and stability of the proposed shaft site at Royal Palms, but also the potential for the excavation of this shaft site to de-stabilize the White Point Landslide and/or other nearby coastal bluffs. A10-2 cont.

b. As a result of the White Point Landslide, West Paseo del Mar is currently closed to traffic just east of the proposed shaft site. With this closure, east-west neighborhood traffic in the *South Shores* area of San Pedro has been diverted inland to West 25th Street, which is a major arterial that provides access to the southerly portion of the City of Rancho Palos Verdes. Has the analysis in Chapter 18 "Transportation and Traffic (Terrestrial)" taken into account the impacts of diverted truck trips and other construction-related traffic on West 25th Street as a result of the closure of West Paseo del Mar? A10-3

3. The City has the following concerns regarding the proposed tunneling activities related to Alternative 4:

a. The proposed tunnel alignment would follow Western Avenue from Trudie Drive/Capitol Drive to the proposed exit shaft site at Royal Palms County Beach. Although most of this segment of the proposed tunnel would be located in San Pedro, a small portion would fall within the City of Rancho Palos Verdes. In recent years, the City of Rancho Palos Verdes has experienced failures of storm drains under Western Avenue, most dramatically in the case of a sinkhole that occurred near Delasonde Drive/Westmont Drive in 2005. Does Chapter 8 "Geology, Soils and Mineral Resources" address the potential impact of tunneling activities upon storm drains and similar, underground public infrastructure within the alignment of the proposed tunnel? A10-4

b. We note that Chapter 10 "Hazards and Hazardous Materials" discusses the close proximity of the tunneling activities for Alternative 4 to contaminated soils at the Defense Fuel Support Point (DFSP) on North Gaffey Street in San Pedro. The analysis of "risk of upset" from tunneling activities under Alternative 4 appears to be limited to the exposure of hazardous materials in the soil related to the operation of the tunnel boring machine. However, the City respectfully suggests that the DEIS/EIR should also analyze the "risk of upset" that tunneling activities might pose upon nearby industrial facilities, particularly the Rancho LPG butane storage facility at North Gaffey Street and Westmont Drive. A10-5

Steven W. Highter and Dr. Aaron O. Allen
9 April 2012
Page 3

c. Chapter 14 "Noise and Vibration (Terrestrial)" states that there are currently no Federal regulations or State environmental guidelines regarding vibration from tunneling operations. The analysis in the DEIS/EIR is based upon studies conducted for the construction of the Red Line subway in the City of Los Angeles, and concludes that there will be no significant groundborne vibration impacts in areas where the depth of the tunnel base is more than one hundred ten feet (110') below the ground surface. Within the City of Rancho Palos Verdes, most of the properties abutting the Western Avenue right-of-way in the vicinity of the proposed tunnel alignment are zoned and developed for non-residential use. However, there is a motel (America's Best Value Inn) located at 29601 Western Avenue, a 70-unit residential condominium (*Eastview Townhouse*) located at 29641 Western Avenue and a 116-bed residential care facility for the elderly (Palos Verdes Villa) located at 29661 Western Avenue. What is the depth of the proposed tunnel base in the vicinity of these properties (relative to ground surface), and how significant is the impact of groundborne vibration expected to be upon them? A10-6

4. Among the major goals of the Clearwater Program are the achievement of system redundancy and the ability to inspect (and possibly repair) the existing 8- and 12-foot-diameter tunnels connecting the Joint Water Pollution Control Plant (JWPCP) to the existing ocean outfalls. As you are aware, these existing tunnels traverse the *Eastview* area of the City of Rancho Palos Verdes. Do the Sanitation Districts have any sense yet of what will be involved in the future inspection and possible repair of these existing tunnels? Should the City expect that the staging of these future activities might occur in our Eastview Park, which is located on land leased from the Sanitation Districts? Can the expected impacts of these future activities somehow be included in the current DEIS/EIR? A10-7

Again, thank you for the opportunity to provide comments on this important project. If you have any questions or need additional information, please feel free to contact me at (310) 544-5226 or via e-mail at *kitf@rpv.com*.

Sincerely,

Kit Fox, AICP
Senior Administrative Analyst

cc: Mayor Anthony Misetich and City Council
Carolyn Lehr, City Manager
Carolynn Petru, Deputy City Manager

M:\Border Issues\LACSD Clearwater Program\20120409_EIS-EIRComments.doc

Response to Comment A10-1

The comment requests that the City of Rancho Palos Verdes General Plan be added to Table 1-3 of the final EIR/EIS. Table 1-3 is revised in the final EIR/EIS to include the following rows at the end of the table, as requested:

> City of Rancho Palos Verdes General Plan/Environmental Impact Report, 1975
>
> The Infrastructure chapter of the City of Rancho Palos Verdes General Plan (City of Rancho Palos Verdes 2012) provides policies related to public infrastructure. The Disposal/Recovery Systems addresses sanitation, while the Transportation Systems discusses the vehicular networks. The general plan is currently being updated.

In addition, Section 25.1.1 is revised in the final EIR/EIS to include the city's general plan by adding the following references:

> City of Rancho Palos Verdes. 1975. City of Rancho Palos Verdes General Plan/Environmental Impact Report. Adopted June 26. As amended through September 13, 1988.
>
> City of Rancho Palos Verdes. 2012. General Plan Update. Available: < http://palosverdes.com/rpv/planning/content/General_Plan_Update.cfm>. Accessed: July 13, 2012.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A10-2

The comment expresses concerns regarding the proximity of the Royal Palms shaft site to the recent White Point landslide and the nature of the Palos Verdes Peninsula soils, which the comment characterizes as susceptible to large-scale land movement. The comment requests that Chapter 8 of the draft EIR/EIS discuss the suitability and stability of the Royal Palms shaft site and the potential for the project to de-stabilize the White Point landslide and/or other coastal bluffs.

The draft EIR/EIS discussed the potential for landslides at the Royal Palms shaft site (part of Alternative 4 [the recommended alternative]), in Section 8.4.6.2, Impact GEO-1, Shaft Site – Royal Palms. The draft EIR/EIS stated that the shaft would be constructed in Altimira Shale, which could contain weak layers, and that excavation could result in ground failure in the vicinity of the shaft. The draft EIR/EIS recognized this as a significant impact. Mitigation was included to reduce this impact to less than significant. Specifically, Mitigation Measure (MM) GEO-1 and MM GEO-6a require geotechnical investigation and site-specific recommendations for stabilization of slopes and shaft instability. The mitigation measures require that all recommendations be incorporated into the final design. In addition, MM GEO-6b requires construction monitoring at the shafts and along the onshore tunnel.

In addition, Appendix 8-A of the draft EIR/EIS included a letter report prepared by Fugro West that addressed the potential for Alternative 4 (the recommended alternative) to affect slope stability in the Royal Palms area. This report was prepared in response to the recent landslide activity on Paseo Del Mar near White Point State Beach. In summary, the report stated that the Monterey Formation throughout the peninsula can be folded and variable over short distances. Weak bentonitic layers contained within the

formation have resulted in some of the landslides when the bedding plane is out of slope (i.e., slopes downhill towards the ocean). In the vicinity of Royal Palms Beach, the bedding planes are sloped in a favorable inclination, which was confirmed during the excavation of the Sanitation Districts of Los Angeles County's (Sanitation Districts') 8- and 12-foot tunnels in 1938 and 1957, respectively. The report concluded that impacts on the stability of the existing slopes in the vicinity of the Alternative 4 alignment resulting from tunnel construction would be unlikely. Furthermore, the reinforced concrete tunnel may improve slope stability. The study recommended that (1) additional geotechnical investigation be conducted during final design and (2) the slopes be instrumented and monitored in advance of, and during, construction activities as a precautionary measure. Implementation of MM GEO-2, MM GEO-6a, and MM GEO-6b would fulfill these recommendations.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A10-3

The comment asks whether the Chapter 18 traffic analysis took into account the impacts of additional traffic on 25th Street as a result of the recent closure of West Paseo Del Mar.

Since collection of the 2010 baseline traffic data in support of the traffic analysis presented in Chapter 18 of the draft EIR/EIS, Paseo Del Mar has been closed for an indeterminate period due to a landslide east of the Royal Palms shaft site. This closure of the roadway link between Western Avenue and Weymouth Avenue to motorized traffic has resulted in localized traffic patterns that differ from those that prevailed when the baseline traffic counts were collected. Therefore, to determine whether there would be differences in the impacts reported in the draft EIR/EIS if Paseo Del Mar were not re-opened by the time construction began for Alternative 4 (the recommended alternative), a new study was conducted. In May 2012, new baseline traffic counts were collected at five study intersections along key access routes to and from the Royal Palms shaft site: Gaffey Street and Interstate 110 ramps, Gaffey Street and 9th Street, Western Avenue and Paseo Del Mar, Western Avenue and 9th Street, and Western Avenue and 25th Street. (Note that the Western Avenue and 25th Street intersection was not previously analyzed in the draft EIR/EIS.) An analysis of the new data determined that the proposed project-related construction-period traffic under Alternative 4 (the recommended alternative) would not result in significant traffic impacts, even if West Paseo Del Mar were to remain closed. These findings are consistent with the original findings presented in the draft EIR/EIS.

The new 2012 study is referenced in Section 18.4.6.2 and included as Appendix 18-D in the final EIR/EIS. No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A10-4

The comment expresses concerns about the potential for tunneling to affect storm drains and other infrastructure in Rancho Palos Verdes, and asks whether the draft EIR/EIS addressed this issue.

The draft EIR/EIS discussed the potential for ground failure to affect people, structures, or property in Section 8.4.6.2. Impact GEO-6 addressed unstable earth conditions or changes in geologic substructure, and found that there was a potential for settlement during tunneling, and that this impact would be significant. Therefore, mitigation was included in the draft EIR/EIS to reduce this impact to less than significant. MM GEO-6a requires geological investigations to characterize the subsurface conditions and anticipated ground behavior, and that recommendations identified in the investigation be incorporated into the final design, along with contingency measures if excessive settlement were to occur.

MM GEO-6b requires a detailed plan for construction monitoring to minimize potential ground surface settlement along the onshore tunnel.

In comparison to the January 2005 sinkhole in Western Avenue just north of Westmont Avenue, the proposed tunnel would be constructed with different material at much greater depths. For Alternative 4 (the recommended alternative) the proposed reinforced concrete tunnel would be constructed through a rock-like material along Western Avenue at depths ranging from 350 to 450 feet below ground surface. Conversely, the January 2005 sink hole resulted from the storm-related failure of an old corrugated metal storm drain constructed through much looser material at a depth of only 25 feet. Therefore, the circumstances are significantly different.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A10-5

The comment suggests that the risk of upset on nearby industrial facilities be analyzed for tunneling activities, particularly the Rancho Liquefied Petroleum Gas (LPG) facility at North Gaffey Street and Westmont Drive.

Alternative 4 (the recommended alternative), would traverse under Gaffey Street between Anaheim Street and Capitol Drive. The two large Rancho LPG butane storage tanks are approximately 600 feet east of the recommended tunnel alignment (Alternative 4). At this location, the tunnel invert would be approximately 100 feet below the ground surface. Section 14.4.1.4 of the draft EIR/EIS specifically analyzed potential groundborne vibrations associated with tunnel construction and concluded that vibrations would not be perceivable beyond a distance of 110 feet through the soil. Furthermore, implementation of Mitigation Measure (MM) NOI-2a (rail maintenance plan) and MM NOI-2b (vibration control plan) would reduce vibration impacts to less than significant. Therefore, given the tunnel location and depth, construction and operation of the tunnel would not have an impact on the Rancho LPG facility, and an upset at the Rancho LPG facility would not have an impact on the tunnel.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A10-6

The comment requests information on the depth of the proposed tunnel base relative to the ground surface and the potential for groundborne vibration impacts for three residential properties along Western Avenue.

The tunnel depth would be approximately 400 feet below the ground surface in the vicinity of the identified properties. Therefore, the impact of groundborne vibrations from the tunneling operation would be less than significant, as described in Section 14.4.6.2 of the draft EIR/EIS.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A10-7

The comment asks what activities would be involved in the future inspection and possible repair of the existing tunnels, would the staging of these future activities occur in Eastview Park, and could the impacts of these future activities be included in the draft EIR/EIS.

The Sanitation Districts have attempted various methods of determining the condition of the existing tunnels (e.g., remote operated vehicle inspection) and will continue to explore additional options. Unfortunately, the information obtained thus far has been insufficient to make a determination. Because both tunnels flow full every day, it appears that the only means of conclusively assessing their condition would be to dewater each and perform a physical inspection as described in the draft Master Facilities Plan and draft EIR/EIS. Implementation of Alternative 4 (the recommended alternative) would allow for such an inspection. The existing shaft at Eastview Park would be included in the overall tunnel inspection. Depending on the location and extent of any necessary tunnel/shaft repairs, a portion of the park may be temporarily used to stage the repair activities. Due to the unknown condition of the tunnels and, consequently, the highly speculative nature of the repair work, it was determined that the potential repair project is beyond the scope of the draft EIR/EIS for the Clearwater Program. However, if it were determined that repairs are required, the associated work would be subject to the California Environmental Quality Act, and appropriate documentation would be prepared at that time. Moreover, if staging activities at Eastview Park were necessary, the Sanitation Districts would coordinate closely with the city of Rancho Palos Verdes to ensure that any potential impacts would be minimized to the extent feasible.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A11: The Port of Los Angeles – Christopher Cannon, Director of Environmental Management

Commenter A11

THE PORT OF LOS ANGELES
425 S. Palos Verdes Street Post Office Box 151 San Pedro, CA 90733-0151 TEL/TDD 310 SEA-PORT www.portoflosangeles.org

Antonio R. Villaraigosa | Mayor, City of Los Angeles
Board of Harbor Commissioners: Cindy Miscikowski, President; David Arian, Vice President; Robin M. Kramer; Douglas P. Krause; Sung Won Sohn, Ph.D.
Geraldine Knatz, Ph.D. | Executive Director

April 9, 2012

Steven W. Highter
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, CA 90601
shighter@lacsd.org

Dear Mr. Highter:

SUBJECT: CLEARWATER PROGRAM DRAFT EIR

The City of Los Angeles Harbor Department (LAHD) supports the Los Angeles County Sanitation Districts (LACSD) Clearwater Program as it would improve the regional wastewater infrastructure. More specifically, LAHD supports improvements to the Joint Wastewater Pollution Control Plant (JWPCP) and its ocean discharge system since they would reduce the likelihood of untreated effluent entering various watercourses such as the Dominguez Channel, Wilmington Drain, and Machado Lake. These watercourses influence water quality within the Port of Los Angeles (Port). A11-1

LAHD has reviewed the Clearwater Program Draft Environmental Impact Report/Draft Environmental Impact Statement (DEIR/DEIS) (State Clearinghouse No. 2008101074) and submits the following comments for your consideration.

Offshore Tunnels

As indicated in the DEIR/DEIS, Alternatives 1 and 2 include the construction and operation of offshore tunnels through the Port that terminate at the Palos Verdes Shelf or San Pedro Shelf. The offshore tunnel alignments are depicted in Figures 3-12 and 3-13 of the DEIR/DEIS and would be approximately 100 to 250 feet below the ground surface or seafloor. Given the general alignment and depth of these tunnels, close coordination with the Port would be required if either of these alternatives is selected. The Port and other utility companies have a number of deep utility crossings (100 feet and deeper) within the Main and East Channels that could be affected. A11-2

Shaft Sites

Alternatives 1 and 2 include shaft sites within the Port, referred to as the TraPac and the LAXT Shaft Sites.

TraPac Shaft Site A11-3

Figure 3-19 of the DEIR/DEIS depicts the approximate location, configuration and size of the TraPac Shaft Site. Construction and operation of the access shaft site would disrupt ongoing operations of the TraPac Container Terminal at Berths 136-147. According to the DEIR/DEIS,

Clearwater DEIR/DEIS Comments Page 2

construction of the shaft would take between 10 and 11 months. During construction, approximately 30 to 65 trucks per day would be required for delivering supplies and removing excavated material. According to Table 3-13 of the DEIR/DEIS, tunnel construction and shaft operation would occur for several years. Once construction of the onshore and offshore tunnels is completed, a permanent easement of approximately 0.3 acre would be needed for future operation and maintenance (O&M) activities. A11-3 cont

The following facts should be considered by LACSD. Redevelopment of the TraPac Container Terminal is expected to begin within 2012 and continue through 2016. Construction and operation of the shaft site could potentially conflict with the TraPac redevelopment. Additionally, construction workers would need to be eligible for the Transportation Worker Identification Credential through the Maritime Transportation Safety Act in order to access the TraPac Container Terminal. A11-4

The noise analysis in Chapter 14 of the DEIR/DEIS did not account for potential noise impacts to the Wilmington Waterfront Park, which is considered a sensitive receptor. The property is owned and operated by LAHD. The park is located between Harry Bridges Boulevard and C Street to the north, from Figueroa Street to Lagoon Avenue to the east. The analysis should account for short-term construction and long-term operational noise impacts to this sensitive receiver. A11-5

LAHD recommends that the TraPac Shaft Site be substituted with a shaft site located between I-110 and Figueroa Street, just north of Harry Bridges Boulevard, where vacant Port property is or will become available. A11-6

LAXT Shaft Site
Figure 3-20 depicts the approximate location, configuration and size of the LAXT Shaft Site. It is generally northwest of the intersection at Ferry Street and Terminal Way, and immediately east of the City of Los Angeles Terminal Island Water Reclamation Plant. LAHD does not object to this shaft site, however is obligated to inform LACSD of conditions that could affect the Clearwater Program. The Port has proposed the Pacific L.A. Marine Terminal (PLAMT) project in the vicinity and PLAMT construction would coincide with construction and/or operation of the shaft site. The availability of property and access to the shaft site would be confined by the PLAMT project. Furthermore, railroad tracks intersecting the shaft site are active and operated by Pacific Harbor Line (PHL) for railcar storage and locomotive fueling and could further interfere with the construction and operation of the shaft site. A11-7

Thank you for the opportunity to comment on this project. We look forward to your response to our comments and notification when the Final EIR/EIS becomes available. Should you have any questions, please contact me at 310-732-3675. A11-8

Sincerely,

CHRISTOPHER CANNON
Director of Environmental Management

cc:LO:JB:

Response to Comment A11-1

The comment expresses support for the Clearwater Program, and specifically for the proposed improvements to the Joint Water Pollution Control Plant and the ocean discharge system.

The Sanitation Districts of Los Angeles County (Sanitation Districts) and the U.S. Army Corps of Engineers appreciate the Port of Los Angeles' support for the Clearwater Program. However, the comment does not address the analysis in the EIR/EIS, so no response is necessary. The comment will be provided to the decision makers for their consideration.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A11-2

The comment requests close coordination with the Port of Los Angeles if Alternative 1 or 2 is chosen because of the potential for either alternative to have an impact on deep utility crossings in the Main and East Channels.

As shown in Table 4 in Appendix 1-B of the draft EIR/EIS, the Sanitation Districts met with the Port of Los Angeles on seven occasions between early 2006 and late 2011 to coordinate the possible construction of a Sanitation Districts' ocean discharge system aligned through the Port of Los Angeles. As proposed, the tunnel alignment for Alternative 1 or 2 would be at depths sufficient to avoid port substructures and utility crossings based on the information provided at these coordination meetings. Alternative 4 (the recommended alternative) would not be aligned through the Port of Los Angeles. If, however, either Alternative 1 or Alternative 2 were selected for implementation, the Sanitation Districts would closely coordinate with port staff during the final design and construction phases of the project.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A11-3

The comment asks that the EIR/EIS consider the impacts of Alternatives 1 and 2 on both ongoing operations and future planned redevelopment of the Trans Pacific Container Service Corporation (TraPac) Container Terminal.

Alternative 4 (the recommended alternative) would not be aligned through the Port of Los Angeles. If, however, Alternative 1 or Alternative 2 were selected for implementation, the Sanitation Districts would closely coordinate with port staff during the final design and construction phases to address concerns raised by this comment, thus ensuring that port operations would not be disturbed.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A11-4

The comment states that construction workers within the Port of Los Angeles would be required to comply with the Maritime Transportation Safety Act.

Alternative 4 (the recommended alternative) would not be aligned through the Port of Los Angeles. If, however, Alternative 1 or Alternative 2 were selected for implementation, construction workers would comply with the Maritime Transportation Safety Act.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A11-5

The comment states that the draft EIR/EIS did not account for potential noise impacts on Wilmington Waterfront Park.

The draft EIR/EIS did not address the potential impacts at Wilmington Waterfront Park because the park did not exist at the time of the notice of preparation/notice of intent, which is the recommended baseline for addressing impacts under the California Environmental Quality Act (CEQA), and is allowed under the National Environmental Policy Act. This site is nearest the TraPac shaft site, which is part of Alternatives 1 and 2. At the nearest point, the park is approximately 100 feet from the TraPac shaft site. Predicted noise levels at 100 feet from this shaft site would be approximately 83 A-weighted decibels (dBA) without a noise barrier. Alternative 4 (the recommended alternative) would not be aligned through the Port of Los Angeles. If, however, either Alternative 1 or Alternative 2 were selected for implementation, additional analysis and mitigation would be required in order to comply with the city of Los Angeles' noise ordinance.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A11-6

The comment recommends an alternative site to TraPac that is located on vacant port property.

Alternative 4 (the recommended alternative) would not be aligned through the Port of Los Angeles. If, however, Alternative 1 or Alternative 2 were selected for implementation, the Sanitation Districts would closely coordinate with port staff during the final design and construction phases and would consider either relocating or eliminating the proposed TraPac shaft site as necessary to address the concerns raised by this comment. The site recommended by this comment (port property between Interstate 110 and Figueroa Street, just north of Harry Bridges Boulevard) would require significant tunnel realignment for Alternative 1 or 2. If new significant environmental impacts result from the access shaft relocation and/or tunnel realignment, they would have to be addressed in a subsequent environmental document.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A11-7

The comment advises that both an existing railcar facility and proposed marine terminal project could have a significant impact on the Los Angeles Export Terminal (LAXT) shaft site.

As shown in Table 4 in Appendix 1-B of the draft EIR/EIS, the Sanitation Districts met with the Port of Los Angeles on seven occasions between early 2006 and late 2011 to coordinate the possible construction of a Sanitation Districts' ocean discharge system aligned through the Port of Los Angeles. During these coordination meetings, it was suggested that the former LAXT property would be a suitable location for a construction shaft site as proposed under Alternatives 1 and 2. However, based on this comment, at least one new condition has emerged that could potentially interfere with construction at the LAXT shaft site. Alternative 4 (the recommended alternative) would not be aligned through the Port of Los Angeles. If, however, either Alternative 1 or Alternative 2 were selected for implementation, the Sanitation Districts would closely coordinate with port staff during the final design and construction phases of the project to ensure that the Sanitation Districts' proposed LAXT shaft site would be compatible with the proposed

adjacent Pacific L.A. Marine Terminal project and the active Pacific Harbor Line railroad tracks that intersect the site.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A11-8

The comment expresses interest in seeing the responses to these comments, and provides future coordination contact information.

As required by CEQA, all commenting agencies are provided with responses to their comments at least 10 days prior to certification of the EIR.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A12: U.S. Environmental Protection Agency, Region IX – Kathleen Martyn Goforth, Manager

Commenter A12

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

APR 0 9 2012

Dr. Aaron O. Allen
Regulatory Division, Ventura Field Office
U.S. Army Corps of Engineers
2151 Alessandro Drive, Suite 110
Ventura, CA 93001

Subject: Draft Environmental Impact Statement for the Sanitation Districts of Los Angeles County Clearwater Program, Los Angeles County, CA (CEQ # 20120028)

The U.S. Environmental Protection Agency is providing comments on the Draft Environmental Impact Statement for the Clearwater Program, Los Angeles County, California. Our comments are provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act. These comments were also prepared under the authority of, and in accordance with, the provisions of the Federal Guidelines promulgated at 40 CFR 230 under Section 404(b)(1) of the Clean Water Act, Section 10 of the Rivers and Harbors Act, and Section 103 of the Marine Protection, Research and Sanctuaries Act. A12-1

EPA appreciated the opportunity to coordinate early and discuss our concerns with the Districts on December 10, 2007, and with the Army Corps of Engineers and the Districts on February 9, 2010 and August 24, 2011. We provided detailed comments on the January 2, 2008 Draft Notice of Intent in our letter dated March 5, 2008. EPA also submitted a letter to the Districts, dated July 30, 2008, clarifying our Superfund Program comments with respect to the effluent-affected sediment deposit on the Palos Verdes Shelf. In a November 4, 2008 letter, we confirmed that our comments on the Draft NOI still applied, based on our review of the NOI released on October 6, 2008.

We commend the Corps and the Districts for selecting their preferred alternative (Alternative 4) which would not necessitate construction of new outfalls that would have the potential to disturb contaminated sediment and generate additional air emissions. We are also pleased that the preferred alternative should avoid impacts to the Palos Verdes DDT Superfund Site and the LA-2 Ocean Disposal site. A12-2

While we acknowledge these positive developments and the need to update the county's sanitation infrastructure, we have rated the preferred alternative in the DEIS as Environmental Concerns – Insufficient Information (EC-2) (please see enclosed "*Summary of Rating Definitions*") due to concerns regarding impacts to air quality, aquatic resources, children's health and environmental justice communities. A12-3

We remain concerned with the localized and cumulative impacts to the already health burdened communities in the vicinity of the project, and recommend the Districts and the Corps commit, in the Final Environmental Impact Statement and Record of Decision, to implementing measures, beyond those identified in the DEIS, that would further reduce air emissions and associated health risks. For example, in anticipation of the availability of cleaner engines prior to commencement of project construction in 2015, we recommend the Districts and the Corps fully integrate the cleanest engines and the best available emission control technologies for equipment to be used during the project's construction phases, A12-4

as well as for the operational elements of the Clearwater Program (e.g. truck hauling of biosolids from Joint Water Pollution Control Plant to various locations for beneficial use or disposal). A12-4 cont.

We were pleased to note that rehabilitation work of the existing outfalls will be limited to depths between 20 and 50 ft below the water's surface. While we believe this should minimize impacts to potentially contaminated sediments, we recommend the FEIS and ROD include Best Management Practices to ensure minimum disturbance to sediments and marine habitats. To better identify potential impacts to aquatic resources, we recommend the FEIS provide additional information describing the potential frequency of bottom sediment disturbance and the volume of bottom sediments disturbed during outfall joint rehabilitation, as well as any direct or indirect impacts to kelp forests and/or kelp bed habitat. This information may be useful in identifying additional avoidance measures. A12-5

Please see the enclosed detailed comments for a more thorough discussion of the comments provided above, as well as additional comments on air and aquatic resources, the Palos Verdes Shelf Superfund Site, greenhouse gas emissions, physical safety, and noise. A12-6

We appreciate the opportunity to review this DEIS. When the FEIS is released for public review, please send one hard copy and one electronic copy to the address above (mail code: CED-2). If you have questions, please contact me at (415) 972-3521 or Tom Plenys of my staff at plenys.thomas@epa.gov. A12-7

Sincerely,

Cornell Dimming

for Kathleen Martyn Goforth, Manager
Environmental Review Office
Communities and Ecosystems Division

Enclosures:
(1) Summary of EPA Rating Definitions
(2) EPA's Detailed Comments

cc: David Castanon, Chief, Regulatory Branch, Los Angeles District, Corps of Engineers
Thomas J. LeBrun, Department Head, County Sanitation Districts of Los Angeles County
Steven Highter, Supervising Engineer, County Sanitation Districts of Los Angeles County

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SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ). A12-3 cont.

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE SANITATION DISTRICTS OF LOS ANGELES COUNTY CLEARWATER PROGRAM, LOS ANGELES COUNTY, CALIFORNIA, APRIL 9, 2012

Air Quality

EPA is concerned about the direct, indirect and cumulative impacts of construction emissions associated with the project, even after mitigation measures have been taken into account. The DEIS includes estimated emissions for criteria pollutants and description of the mitigation measures that will be implemented to reduce the adverse air impacts identified in the DEIS; however, even with implementation of these mitigation measures, combined peak daily emissions from outfall rehabilitation, coupled with the construction of the on-shore tunnel and shaft sites, would exceed South Coast Air Quality Management District daily emissions significance thresholds for nitrogen oxides under the preferred alternative (p. 5-114). Table 5-56 indicates the construction of the on-shore tunnel, alone, from 2016 to 2020 would exceed the 100 pounds per day NO_x threshold.

Given the severe air quality problems within the project area, all feasible measures should be implemented to reduce and mitigate air quality impacts to the greatest extent possible. This is especially important for the South Coast Air Basin nonattainment criteria pollutants including volatile organic compounds, NO_x, and particulate matter, both 10 microns or less (PM_{10}) and 2.5 microns or less ($PM_{2.5}$). A12-8

> *Recommendation:*
> The Districts and Corps should ensure that mitigation measures in the DEIS, and additional mitigation measures that go beyond those in the DEIS (see recommendations, below), are implemented on a schedule that will reduce construction emissions to the maximum extent feasible. All mitigation measures proposed in the DEIS and any additional measures should be included in the Final Environmental Impact Statement and the Record of Decision. The FEIS should describe how these mitigation measures will be made an enforceable part of the project's implementation schedule. We recommend implementation of applicable mitigation measures prior to or, at a minimum, concurrent with the commencement of construction of the project.

Additional mitigation for non-road engines

EPA appreciates the efforts of Corps and the Districts to identify the suite of seven air quality mitigation measures to reduce emissions from project construction (p. 5-127). In particular we were pleased to note the use of the all-electric tunnel boring machine.

In light of the air quality in and around the Ports of Los Angeles and Long Beach, and the SCAB in general, we recommend that the Corps and the Districts commit to implementing best available emission control technologies for construction, ahead of the California Air Resources Board's in-use off-road diesel vehicle regulations, regardless of fleet size.[1] EPA began phasing-in Tier 4 standards for non-road engines in 2008,[2] and the DEIS notes the availability of Tier 4 non-road engines, effective January 1st, 2015. The use of such engines would result in an approximately 90% reduction in NO_x and PM emissions as compared to Tier 3 (p. 5-13); yet, although construction is expected to begin after January 1, 2015, MM AQ-2b and 3b state that all off-road diesel powered equipment used during construction will be equipped with an EPA Tier 3 engine, except for A12-9

[1] See CARB's Factsheet at: http://www.arb.ca.gov/msprog/ordiesel/faq/overview_fact_sheet_dec_2010-final.pdf
[2] See EPA website: http://www.epa.gov/nonroad-diesel/2004fr/420f04032.htm#standards

1

specialized equipment that is not available (p. 5-121). The DEIS leaves open the possibility of using Tier 4 engines, if available, but does not commit to their use (p. 5-42).

Recommendations:
The FEIS and ROD should commit to using non-road construction equipment that meets Tier 4 emission standards, when available, and best available emission control technology, for construction that occurs prior to Tier 4 standards availability. A12-9 cont

The FEIS should indicate the expected availability of Tier 3 and Tier 4 engines for the construction equipment list provided in Appendix 3-A.

The FEIS should update the tables in the Chapter 5 impact analysis to reflect the additional criteria pollutant emissions reductions that would result from using Tier 4 engines for each component of project construction.

Mitigation Measure AQ-2f for harbor craft recommends the use of the cleanest marine diesel engines available at the Port of Los Angeles. The mitigation measure does not specifically discuss new Tier 4 standards applicable to harbor craft in 2015.

Recommendation:
Mitigation Measure AQ-2f should be revised to require Tier 4 equivalent harbor craft as of January 2015. It should also be revised so that the contractor is required to provide proof that the cleanest Tier is unavailable in California, Oregon or Washington, before allowing the use of a lower Tier harbor craft. A12-10

Mitigation Measure AQ-2g for tunnel locomotives recommends the use of US EPA Tier 4 engines. The mitigation measure does not discuss the availability of battery-electric locomotives.

Recommendations:
The FEIS should include a discussion of available battery-electric locomotives suitable for tunnel construction. A12-11

Mitigation Measure AQ-2g should be revised to require battery-electric locomotives during tunnel construction pending availability and applicability.

Additional mitigation for on-road engines

The DEIS estimates 30 to 65 truck trips per day during construction of the West Shaft Site, 10 to 40 truck trips per day during construction of the Royal Palms Shaft Site, and 48 to 95 truck trips per day during on-shore tunnel alignment construction (p. 3-15 and 3-17). As a result of the expansion of the Joint Outfall System and the increased biosolids processing at the Joint Water Pollution Control Plant, it is anticipated that there would be an additional 20 truckloads per day above 2008 baseline levels to haul biosolids to various locations for beneficial use or disposal (p. 5-25). By 2050, approximately 27,500 trucks per year would transport biosolids from the JWPCP to the beneficial use and landfill locations (p. 3-8). A12-12

MM AQ-2a and 3a state that all on-road heavy-duty diesel trucks used during construction (greater than 26,000 pounds) will include a particulate matter trap or have a 2007 model engine or newer (p. 5-121). MM AQ-2d and 3d indicate alternative fuels will be evaluated for their use during construction.

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In view of the heavily impacted air basin and nearby residents, exceedances of the SCAQMD thresholds for NO_x, and the potential adverse impacts to environmental justice communities, the cleanest achievable NO_x emission controls are justified for trucks and equipment used on this project during the construction phase as well as the program operational elements.

Recommendations:

The FEIS should address PM_{10}, $PM_{2.5}$ and NO_x emission levels as part of the on-road diesel engine discussion in Chapter 5 (p. 5-13), and include a table, similar to Table 5-8 for off-road engines, highlighting emission levels for on-road engines. Discuss and compare these levels to those that would be achieved with alternative fuel use.

The FEIS should discuss the availability of on-road engines that meet the NO_x emission standard of 0.2 g/bhp-hr for each on-road vehicle application required as part of the project construction and program operational elements. It should note that EPA on-road standards allowed manufacturers to phase-in compliance with this standard, and that 100 percent of vehicle sales met the standards as of 2010.

Mitigation Measures AQ-2a and 3a, as well as MM AQ-2d and 3d, should commit to meeting the cleanest available on-road emission standards for trucks to be used during project construction, as well as program operational elements (e.g. hauling of biosolids from JWPCP). A12-12 cont

MM AQ-2a and 3a should be updated to apply to all on-road heavy-duty diesel trucks greater than 14,000 pounds versus the current 26,000 pounds mentioned in the DEIS.

The FEIS should update the tables in the Chapter 5 impact analysis to reflect the additional criteria pollutant emissions reductions that would result from using the cleanest available on-road engines for each component of project construction and program operational elements.

The FEIS should describe the location of expected final disposal locations for excavated materials and include criteria that would minimize overhaul hauling distances.

Provide a quantification of (1) the additional air quality impacts associated specifically with the trucking of the excavated material and (2) the air quality benefits expected to be achieved by specific mitigation measures. If prior analysis of emissions and mitigation strategies has been conducted, update the FEIS to reflect this.

The Ports' Clean Trucks Programs, key elements of the neighboring Ports' Clean Air Action Plan, have substantially reduced port-related air emissions, especially diesel emissions, in the vicinity of the project. Last August, the Ports released the technical document, "Roadmap for Moving Forward with Zero Emissions Technologies at the Ports of Long Beach and Los Angeles – Technical Report." The report is their mechanism for evaluating various methods of transport that produce no air pollution at the tailpipe. Through the CAAP, the ports created the Technology Advancement Program, which places a priority on the development and demonstration of zero emission technologies for port-operations, consistent with this report.[3] A12-13

[3] Website for the report at: http://www.cleanairactionplan.org/civica/filebank/blobdload.asp?BlobID=2527

3

Recommendations:
The FEIS should discuss the Ports' Clean Trucks Programs and how their success could be transferred to truck applications proposed for construction of the Clearwater project, as well as the fleet of trucks used to transport biosolids from the JWPCP. The FEIS should also discuss incentives and require continuous improvement for trucks servicing the construction sites and the JWPCP.

The FEIS should describe zero and near zero emission tailpipe demonstration and deployment projects, and include a mitigation measure providing a schedule for phase-in of zero emission heavy duty trucks, as practicable, for construction related heavy duty trucks, as well as biosolids transport trucks, following successful demonstrations by the ports through their Clean Trucks Programs. A12-13 cont

The FEIS should commit to reviewing periodically (e.g., every three years from the date of the ROD), new technologies and regulations specific to heavy-duty trucks to further reduce NO, and other criteria pollutant and air toxics emissions. Additionally, technology reviews and any recommendations that result should be made available to the public.

Analysis of Localized Emissions Impacts

Potential local effects can include emissions of volatile organic compounds, carbon monoxide, nitrogen oxides, PM_{10}, and $PM_{2.5}$. Because some communities impacted by this project are predominantly minority and low income communities, these impacts could constitute a disproportionately adverse impact on minority and low income populations. We note the DEIS evaluates the localized impact of construction emissions using the SCAQMD's Localized Significance Thresholds and that the "NOx LST" was scaled to reflect the federal NO_2 standard (p. 5-32). A12-14

Recommendation:
The FEIS should clarify the calculations used to adjust the LST threshold based on the federal NO_2 standard and demonstrate compliance with both EPA and SCAQMD localized thresholds.

Impact AQ-6 considers whether the public is exposed to significant levels of toxic air contaminants. The DEIS concludes, for each alternative, that, because exposure to diesel exhaust would be well below the 70-year exposure period at any given location, construction of the preferred alternative is not anticipated to result in an elevated cancer risk to exposed persons, due to the short term nature of construction. While we recognize that Table 5-23 includes a hazard index of greater than or equal to 1.0 as presumably a non-cancer significance threshold, Impact AQ-6 does not discuss or analyze the non-cancer risks associated with short term exposures. Numerous scientific studies have linked particulate pollution exposure to a range of health problems, including premature death, increased hospital and emergency room visits for cardiovascular and respiratory effects, and development of chronic respiratory disease. A12-15

Recommendations:
Discuss, in the FEIS, the range of potential non-cancer health problems linked to particulate pollution, including diesel PM.

Discuss and analyze, for each alternative, as appropriate, the relative contribution (or project increment) to the acute hazard index from toxic air contaminants during construction as well as a total hazard index (background plus project exposure).

Consider incorporating, into the FEIS, additional mitigation, as appropriate, such as altering the construction schedule or using high emitting equipment only when emissions would otherwise be low, which may sufficiently change the timing of emissions to avoid an acute residential or non-residential hazard. A12-15 cont

Greenhouse Gas Emissions - Construction and Operation Bid Specifications

In soliciting future contracts for project construction and program operations, consider including in the FEIS, and adopting in the ROD, the following additional requirements:

a) Soliciting bids that include use of energy- and fuel-efficient fleets;
b) Giving preference to construction bids that use Best Available Control Technology, particularly those seeking to deploy zero emission technologies;
c) Requiring that contractors ensure to the extent possible that construction activities utilize grid-based electricity and/or onsite renewable electricity generation rather than diesel and/or gasoline powered generators. A12-16
d) Employing the use of alternative fueled vehicles;
e) Using lighting systems that are energy efficient, such as LED technology;
f) Using the minimum feasible amount of GHG-emitting construction materials that is feasible;
g) Use of cement blended with the maximum feasible amount of flash or other materials that reduce GHG emissions from cement production;
h) Use of lighter-colored pavement where feasible;
i) Recycling construction debris to maximum extent feasible; and,
j) Planting shade trees in or near construction projects where feasible.

Environmental Justice

The Department of Defense is signatory to the August 4, 2011 Memorandum of Understanding on Environmental Justice and Executive Order 12898. In addition to reinforcing the federal government's commitment to environmental justice, the MOU is relevant to actions such as the Clearwater Program through its focus on NEPA and Title VI of the Civil Rights Act. In light of this renewed commitment and focus, we recommend that the Corps consider changes to mitigation measures, as proposed in this letter and by other stakeholders, to avoid or further mitigate the project's adverse impacts. Further efforts to reduce environmental justice impacts could assist local entities that receive Federal funds to meet their potential obligations under Title VI of the Civil Rights Act. A12-17

The Environmental Justice analysis in the DEIS only analyzes impacts that were determined to be significant and unavoidable (p. 15-27). The EJ analysis concludes that, because the significant and unavoidable air quality impacts that would occur as a result of NOx emissions during construction of the Clearwater Program are regional emissions, the emissions would not result in adverse effects on minority and low-income populations, as the impacts on the reference community (Los Angeles County) and the affected community would be the same (p. 15-28). Because of the limitations of the EJ analysis, neither localized emissions from the project nor cumulative impacts are discussed in the EJ analysis.

The DEIS does note that the JWPCP West Shaft Site (proposed under Alternative 4) study area has a greater presence of minority and low-income populations in comparison to the reference community (p. 15-46). Additionally, sensitive receptors are located only 105 ft from the West Shaft

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site (Figure 5-11), and numerous homes are located within a few hundred feet. The communities in the study area, and the local communities nearby, are already heavily impacted by air emissions[4], a condition likely to be exacerbated by the many projects currently planned at and around the Ports of Los Angeles and Long Beach, such as the Corps' Pier S and American President Lines' container terminal projects, the Southern California International Gateway, and perhaps the expansion of Interstate 710. Therefore, all impacts, even seemingly small ones, are important to consider and mitigate in order to fully offset the adverse project-related impacts to the local community.

There is a growing body of evidence that environmental justice communities are more vulnerable to pollution impacts than other communities[5]. As discussed in EPA's *Framework for Cumulative Risk*[6] and *Integrated Science Assessment for Oxides of Nitrogen – Health Criteria*[7] *(July 2008)*, disadvantaged, underserved, and overburdened communities are likely to come to the table with pre-existing deficits of both a physical and social nature that make the effects of environmental pollution more, and in some cases, unacceptably, burdensome. Thus, certain subpopulations may be more likely to be adversely affected by a given stressor than is the general population.

As stated by the Council on Environmental Quality[8], the identification of disproportionately high and adverse human health or environmental effects on a low-income or minority population does not preclude a proposed agency action from going forward nor compel a finding that a proposed project is environmentally unacceptable. Instead, the identification of such effects is expected to encourage agency consideration of alternatives, mitigation measures, monitoring needs, and preferences expressed by the affected community or population.

A12-17 cont.

Recommendations:
Given the magnitude of potential cumulative health impacts, the FEIS should consider all feasible mitigation strategies, monitoring measures, and the preferences expressed by the local community. Examples of mitigation measures that should be considered to reduce the community's exposure and reduce community vulnerability are:

- Fund proactive measures to improve air quality and general health in neighboring homes, schools, and other sensitive receptors;
- Provide public education programs about environmental health impacts to better enable residents to make informed decisions about their health and community;
- Engage in proactive measures to train and hire local residents for construction or operation of the project to improve their economic status and access to health care; and,
- Expand and improve the local community parks and recreation system in areas where air quality is highest, in order to provide increased access to open space and exercise opportunities.

As an element of the Corps' Pier S project, the proponent, the Port of Long Beach, offered grant funds for impacts that could not be fully mitigated. We recommend that the Corps and

[4] Final Report, Multiple Air Toxics Exposure Study in the South Coast Air Basin, MATES-III, September 2008, South Coast Air Quality Management District.
[5] Symposium on the Science of Disproportionate Environmental Health Impacts, March 17 - 19, 2010, see the fourteen scientific reviews commissioned by EPA and published in the American Journal of Public Health at: http://www.epa.gov/compliance/ej/multimedia/albums/epa/disproportionate-impacts-symposium.html
[6] Available at: http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=54944.
[7] Available at: http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=194645#Download.
[8] Environmental Justice Guidance Under the National Environmental Policy Act, Council on Environmental Quality, 10 December 1997.

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Districts consider establishing a similar program to facilitate implementation of the above and/or other mitigation measures, and discuss this in the FEIS. A12-17 cont.

Children's Environmental Health and Safety

Executive Order 13045 on Children's Health and Safety directs that each Federal agency shall make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, and shall ensure that its policies, programs, activities, and standards address these risks. Analysis and disclosure of these potential effects under NEPA is necessary because some physiological and behavioral traits of children render them more susceptible and vulnerable than adults to health and safety risks. Children may be more highly exposed to contaminants than are adults because they generally eat more food, drink more water, and have higher inhalation rates relative to their size. Also, children's normal activities, such as putting their hands in their mouths or playing on the ground, can result in higher exposures to contaminants as compared with adults. Children may be more vulnerable to the toxic effects of contaminants because their bodies and systems are not fully developed and their growing organs are more easily harmed.

Based on current EPA policy and guidance, an analysis of impacts to children should be included in a NEPA analysis if there is a possibility of disproportionate impact on children related to the proposed action.[9] EPA views childhood as a sequence of life stages, from conception through fetal development, infancy, and adolescence. Therefore, exposures to children at each life stage, as well as to pregnant and nursing women, are relevant and should be considered when addressing health and safety risks for children. A12-18

Chapter 5 of the DEIS discusses air quality impacts and uses the SCAQMD Localized Significance Threshold Methodology to assess localized air quality impacts from construction activities. Table 5-21 provides approximate distances of proposed construction sites to nearest non-resident sensitive receptors.

Recommendations:
In addition to considering schools and convalescent homes as non-resident sensitive receptors, the FEIS should discuss and update analyses to include child care facilities as non-resident sensitive receptors when assessing localized air quality impacts from construction activities.

The FEIS should describe the specific location for all staging areas to be used during construction at each shaft site, and confirm that these locations would result in the least environmental impacts and disruption to sensitive receptors, including schools and child care centers. The FEIS should also consider smaller footprints for the proposed shaft sites and construction schedules that would minimize impacts to such sensitive receptors.

Please also identify measures to reduce identified impacts, including measures identified in the recently released Draft Schools Environmental Health Guidelines for reducing exposure of environmental hazards near schools.
http://www.epa.gov/schools/ehguidelines/index.html.

[9] U.S. EPA. April 4, 1996. Memorandum: Interim OPA Program Guidance on Implementing the EPA Policy on Evaluating Health Risks to Children. Available at: http://www.epa.gov/compliance/resources/policies/nepa/children-health-risks.pg.pdf.

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Chapter 5 states that construction-related air pollution emissions would be reduced with the implementation of mitigation measures; however, construction-related emissions of NO_x would continue to exceed the SCAQMD significance threshold and have an incremental regional air quality effect. Research has linked short-term NO_2 exposures with adverse respiratory effects, including airway inflammation in healthy people and increased respiratory symptoms in people with asthma.[10] Children may be more susceptible to air pollution and experience higher exposures than adults. According to the 2007 Los Angeles County Health Survey, 9.5% of children less than 18 years old who live in the Los Angeles County South Bay Service Planning Area (also known as SPA 8) currently have asthma or had an asthma attack in the preceding 12 months.[11] A12-18 cont.

Recommendation:
The FEIS should discuss current rates of asthma in the study area and how construction-related air emissions may impact children's health.

Chapter 10 states that aerially deposited lead and asbestos may be present in surface soils at the JWPCP East, JWPCP West, and TraPac shaft sites. Residences have been identified near these shaft sites and a school was identified as being located near the JWPCP East shaft site. It is unclear whether soil screening has been completed or will be conducted prior to construction to assess the levels of lead and asbestos in surface soil. A12-19

Recommendation:
The FEIS should discuss whether activities have or will be completed to characterize potential surface soil contamination at these sites prior to excavation.

Palos Verdes Shelf Superfund Site

The preferred alternative would not require new outfalls and, as a result, should avoid impacts to the Palos Verdes DDT Superfund Site. While we are pleased this alternative would address many of the concerns we previously raised through our scoping comments and during our in person meetings pertaining to the Superfund site, the current alternatives analysis does not sufficiently characterize the impacts to the Palos Verdes DDT Superfund Site under each alternative, nor how such information was used to support selection of the preferred alternative.

Recommendations:
The "Description of Alternatives" (p. 3-4), in the FEIS, should include avoidance and impact minimization of the Palos Verdes Shelf Superfund Site as one of the screening criteria. A12-20

The FEIS should include a discussion on how the construction, operation, rehabilitation and maintenance activities under each alternative would impact the Palos Verdes Shelf Superfund Site and identify any potentially necessary remedial actions.

The FEIS should discuss potential environmental effects due to disturbance of DDT contaminated sediments that could result from effluent discharge and changes in currents as a result of the JWPCP outfall. A discussion of modeling and monitoring results used to determine environmental effects should also be included.

[10] U.S. Environmental Protection Agency. Nitrogen Dioxide: Health, last updated on July 6, 2011, http://www.epa.gov/airquality/nitrogenoxides/health.html.

[11] 2007 Los Angeles County Health Survey. Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health.

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The FEIS should evaluate the alternatives with recognition that two of the offshore tunnel alignments have the potential to cause unavoidable, but mitigable, impacts to the Palos Verdes Superfund Site.

The FEIS should amend Chapter 10 - Hazardous Material – to discuss contaminated sediment at the Palos Verdes Shelf Superfund Site and disclose that two of the proposed offshore tunnel alignments terminate on Palos Verdes Shelf Superfund Site. A12-20 cont

Please include the extent of DDT and PCB contamination as recorded in 2007[12] on Figure 13-4, and indicate the location of the proposed existing outfall rehabilitation activities.

The FEIS should acknowledge in Chapter 2 that the Districts entered into a Consent Decree in 1997 with EPA to address the DDT and PCB contaminations on the Palos Verdes Shelf.

We were pleased to note that rehabilitation work on the existing outfalls will be limited to depths between 20 and 50 ft below the water's surface. While we believe this should avoid potentially contaminated sediments and not interfere with the proposed CERLCA remedy[13], we recommend the FEIS and ROD include Best Management Practices to ensure minimum disturbance to sediments and marine habitats.

Recommendations:
EPA expects the proposed CERCLA remedy (sediment cap for the Palos Verdes Superfund site) will be implemented by 2018, prior to the proposed construction start date for offshore diffusers and risers and existing outfall rehabilitation. The FEIS and ROD should include commitments from the Corps and the Districts to coordinate with EPA during design and construction to ensure the selected alternative will not interfere with Superfund remediation activities. A12-21

In the FEIS, for each alternative, as part of the discussion on the existing outfall rehabilitation, off-shore tunneling and riser/diffuser construction:

- Include potential impacts from the construction and rehabilitation activities (e.g. ballasting work) to the proposed CERLCA remedy.
- Propose avoidance measures to minimize impacts from the construction and rehabilitation activities to the proposed CERCLA remedy.
- Propose mitigation measures to mitigate unavoidable impacts to the CERCLA remedy.
- Include a commitment to notify and coordinate with EPA if the proposed outfall rehabilitation activities occur beyond the 50 feet isobath.

Clean Water Act Section 404

The preferred alternative identified in the Corps' DEIS and February 13, 2012 Public Notice would avoid and minimize the impacts to aquatic resources described for Alternatives 1-3, including impacts associated with dredging and sediment disposal and fill from new outfall construction. A12-22

[12] In October, 2007 EPA issued the Final Palos Verdes Superfund Site Remedial Investigation Report. The Remedial Investigation Report contains EPA's last published characterization of the PV Shelf PCB and DDT contamination.

[13] Interim Record of Decision, Palos Verdes Shelf Operable Unit 5 of Montrose Chemical Corporation Superfund Site, Los Angeles County, California, September 2009.

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Because of the degree to which project impacts would be avoided and minimized, EPA supports the identification of Alternative 4 as the preferred alternative. We will provide our comments on the Public Notice in a separate letter; but, preliminarily, EPA considers Alternative 4 to be the least environmentally damaging practicable alternative (LEDPA) that will achieve the overall project purpose.

The DEIS states that, in 2008, 150 acres of kelp were reported in the White Point area, but it is not clear whether the project would result in any impacts to this specific habitat. Kelp forest and kelp bed are highly productive aquatic habitats providing areas for spawning, foraging and refuge for several marine species. These habitats can also provide physical buffers that can attenuate wave energy, reducing damage to coastal environments. A12-22 cont

Recommendation:
The FEIS should more accurately describe locations of kelp forest and/or kelp bed in proximity to the proposed project activities, clearly state whether the proposed project is expected to have any direct or indirect impacts to kelp, and, if so, how impacts will be avoided, minimized, and/or mitigated consistent with the CWA 404(b)(1) Guidelines.

It is unclear to what extent sediment disturbance, during construction of the preferred alternative, could result in increased turbidity and exposure of contaminated sediments. Based on the project description for Alternative 4, some ballast rock would be temporarily removed from the outfall pipes to expose the joints so that couplings and concrete or epoxy can be installed. EPA assumes that the entire circumference of the pipe would need to be exposed around each joint to complete this operation. If so, there is potential to disturb bottom sediments at several locations along the three outfalls. A12-23

Recommendation:
While it is expected that turbidity will be localized and temporary, it would be helpful to include additional language in the FEIS better describing the approximate number of locations where outfall joint rehabilitation will occur, and an estimate of the volume of bottom sediments that could be disturbed. This additional information would better inform whether additional sediment sampling and BMPs would be appropriate to prevent the redistribution of contaminated sediments, control turbidity, and protect aquatic organisms in proximity to the project.

Cumulative Impacts

The Council on Environmental Quality's regulations for implementing NEPA define cumulative effects as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions (40 CFR Part 1508.7).

The cumulative impact analysis provided in the DEIS does not fully assess and quantify cumulative impacts associated with the project. The DEIS includes a map of 'cumulative projects' in the vicinity of the project (Figure 21-1). It appears that the list of 'cumulative projects' was provided without being incorporated into an analysis of what additional impact to resources those projects may have when also considered with the Clearwater project. A12-24

For air quality, the cumulative impacts analysis indicates that, after mitigation, the incremental effect on cumulative air quality impacts for NO_x during construction for Alternatives 1 through 4 would be significant and unavoidable. The cumulative impacts analysis does not discuss other key

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pollutants of concern, such as VOCs, PM_{10} and $PM_{2.5}$. As stated earlier, the cumulative air quality impacts of the proposed project are of concern to EPA; however, the degree of impact cannot be determined without a quantification of emissions of specific pollutants as was done for air quality impacts assessed in Chapter 5. This lack of quantified cumulative emissions leaves the reader uncertain as to how significant these cumulative impacts could be.

Recommendations:
The FEIS should update the list of cumulative impact projects and, in tabular format, summarize each project's current status, proximity to, and anticipated schedule overlap with the proposed project. It is critical to understand the full scope of the construction and timing of operation for the multiple ongoing projects in order to assess potential cumulative impacts. A12-24 cont.

The FEIS should include a quantification of cumulative emissions from the project and, at a minimum, other nearby goods movement projects, including terminal expansion projects at the Ports of Los Angeles and Long Beach, nearby proposed intermodal facilities and freeway expansion projects (e.g. the I-710), where emissions have already been quantified. Results should be provided in tabular format.

Discuss, in the FEIS, whether there are projects that, if all constructed at the same time, would heavily burden specific communities (with regard to construction impacts). Discuss whether there are measures that could be adopted, such as staging construction, so as not to overly-impact one community.

Noise Impacts

Chapter 14 discusses noise and vibration impacts from program and project construction. Noise sensitive receptors were identified near the shaft sites and the DEIS includes noise mitigation measures that will be implemented. Mitigation measure MM NOI-4b states that a complaint/response tracking program will be initiated prior to constriction, and a construction schedule will be made available to residents living near construction areas. A12-25

Recommendation:
The FEIS and ROD should include a commitment to provide the construction schedule and contact information of the noise disturbance coordinator to affected sensitive receptors, including schools and child care facilities, that are in the vicinity of construction areas.

Physical Safety

The DEIS states that access to the shaft sites will be controlled through the use of fencing and controlled access locations (p. 10-29). The 40 to 60 ft diameter JWPCP West Shaft Site and the 25 to 35 ft diameter Royal Palms Shaft Site could pose a risk of physical injury to anyone who enters the area unsupervised and without permission. Truck traffic, due to construction activities, is also expected to increase in the vicinity of the shaft sites. A12-26

Recommendations:
The FEIS and ROD should include a commitment to ensure signs are posted along the fence line that clearly communicate the danger of entering this area, especially at shaft sites that have nearby residences, schools, child care facilities, and parks.

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The FEIS and ROD should include a commitment to ensure schools, child care facilities, and/or residences are notified of increased truck traffic, once truck routes are established for program and project elements. A12-26 cont

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Response to Comment A12-1

The comment provides an introduction and references the U.S. Environmental Protection Agency's (EPA's) comments on the notice of intent. The comment also expresses appreciation for the coordination meetings conducted during the planning process.

The Sanitation Districts of Los Angeles County (Sanitation Districts) and the U.S. Army Corps of Engineers (Corps) appreciate the EPA's acknowledgement of the Clearwater Program agency scoping meetings. However, the comment does not address the analysis in the environmental documents, so no response is necessary. The comment will be provided to the decision makers for their consideration.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-2

The comment expresses support for the selection of Alternative 4 as the recommended alternative and for avoidance of the Palos Verdes dichlorodiphenyltrichloroethane/polychlorinated biphenyl (DDT/PCB) Superfund Site and the LA-2 Ocean Disposal site.

The Sanitation Districts and the Corps appreciate the EPA's support for the selection of Alternative 4 as the recommended alternative. However, the comment does not address the analysis in the environmental documents, so no response is necessary. The comment will be provided to the decision makers for their consideration.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-3

The comment states that the agency rated the draft EIR/EIS as "Environmental Concerns – Insufficient Information (EC-2)" due to concerns about air quality, aquatic resources, children's health, and environmental justice. The comment also explains the rating system used by the EPA.

See Responses to Comments A12-4 through A12-26.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-4

The comment requests that additional air quality measures, such as using cleaner engines and best available control technologies (BACT) for equipment, be implemented during project construction and as part of the operational phase of the Clearwater Program.

In Chapter 5 of the draft EIR/EIS, mitigation measures that exceed regulatory requirements were included to protect public health to the highest extent practical and to reduce air quality impacts.

The Sanitation Districts are a regional public works agency that awards projects to contractors following an open bid process prescribed by state law. For construction projects, the equipment and vehicles are owned and operated by contractors. The contractor bears the responsibility for the regulatory compliance of its fleet and equipment, and makes the decisions regarding fleet mix and replacement schedule. The

specifications and engineering drawings that are developed for the bid advertisement cannot be based on the presumption that certain technologies or equipment may be available at the start of construction.

Project construction is anticipated to start in 2015. Only equipment or engines that are known with certainty to be in use or available at the start of construction can be specified at this time. As indicated in Section 5.3.1.2 of the draft EIS/EIR, the manufacture of Tier 4 engines is being phased in from 2008 to 2015. Consequently, it is uncertain to what extent contractor fleets will include these diesel engines when construction begins. The mitigation measures proposed exceed California Air Resources Board's (CARB's) fleet turnover compliance schedule.

Several mitigation measures would be incorporated into the project construction to lessen air quality and health risk impacts:

- Mitigation Measure (MM) AQ-2a (same as MM AQ-3a) specifies that heavy-duty diesel trucks used during construction with a gross vehicle weight greater than 26,000 pounds will have a 2007 model year engine or newer. Table 5-11 of the draft EIR/EIS showed that in 2015 only trucks with pre-1994 engines need to be replaced. MM AQ-2a goes beyond this regulatory requirement by requiring a cleaner engine. In response to EPA's request to lower the gross vehicle weight threshold in MM AQ-2a to 14,000 pounds, the Sanitation Districts have revised MM AQ-2a in the final EIR/EIS as follows:

  > MM AQ-2a. All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than ~~26,000~~14,000 pounds will ~~include a particulate matter trap or~~ have a 2007 model year engine or newer, or be equipped with a particulate matter trap.

  This revision also applies to MM AQ-3a and MM GHG-1a. This revision applies to Alternatives 1 through 4 and elsewhere in the final EIR/EIS and final Executive Summary where MM AQ-2a, MM AQ-3a, and MM GHG-1a occur.

- MM AQ-2b would require off-road diesel equipment used during construction to be equipped with Tier 3 engines and a diesel particulate matter trap. This would exceed EPA rules for in-use off-road diesel engines and CARB compliance schedule and nitrogen oxide (NO_X) targets for off-road diesel fleets (Table 5-12 of the draft EIR/EIS).
- MM AQ-2e would route trucks away from congested streets or sensitive receptor areas as feasible. This measure is not required by regulation, but the Sanitation Districts attempt to minimize project impacts where feasible.
- MM AQ-2f would require using the cleanest harbor craft available at the Port of Los Angeles for the project.
- MM AQ-2g would require a Tier 4 engine for the tunnel locomotive, which would exceed regulatory requirements.

As shown in Table 5-27 of the draft EIR/EIS, the potential impacts from the operational element of biosolids truck hauling were determined to be less than significant without mitigation. No new mitigation measures are necessary. The Sanitation Districts, however, will continue ongoing efforts to promote feasible low emissions technologies and commercially available alternative fuel vehicles (e.g., ethanol, compressed natural gas [CNG], liquefied propane gas, or biodiesel) for hauling biosolids.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-5

The comment recommends that the final EIR/EIS and record of decision (ROD) include best management practices (BMPs) that minimize disturbance to sediment and marine habitats, and provide more detail on the extent of sediment impacts and kelp disturbance.

As described in Section 7.2.5.4 of the draft Master Facilities Plan (MFP), Section 3.3.2.3 of the draft EIR/EIS, and the draft Executive Summary, rehabilitation of the existing ocean outfalls would include re-ballasting and joint repairs. Rehabilitation of the existing ocean outfalls would not require mechanical dredging or removal of large quantities of sediment. A small derrick barge would be used to place the ballast rock around the outfalls and to support the joint repair work. The re-ballasting work would occur on the existing 72-, 90-, and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A tube extending from the barge deck to the ocean floor would ensure that placement of ballast rock would not extend beyond the existing footprint. Joint repairs would require the temporary removal of sediment and ballast rock to fully expose the joint being repaired. A team of divers would remove the ballast rock and hand-shovel approximately 2 cubic yards of sediment from each joint. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. Cathodic protection would also be restored or added where necessary. It is estimated that approximately 10 to 40 joints would require repair, resulting in the hand removal of approximately 20 to 80 cubic yards of sediment. Therefore, because no mechanical dredging would be associated with Alternative 4 (the recommended alternative), the rehabilitation work would entail removal of *de minimis* quantities of sediment.

In the White Point area, kelp can be found on the 72-, 90-, and the 120-inch outfalls at water depths ranging from approximately 40 to 70 feet. Areas shoreward of 40-foot depths do not support kelp due to wave action, sea urchin grazing, and the absence of hard substrate. The proposed re-ballasting work would occur at water depths ranging between approximately 20 and 50 feet. Thus, there would be some overlap between the general work area and the kelp habitat from approximately 40 feet to 50 feet. As a result, re-ballasting activities could impact kelp growing on the outfall pipes and the adjacent rock ballast. However, the impact would be minimized because the proposed method of placing the new ballast rock ensures that the work would be limited to the existing footprint of the outfalls (i.e., pipeline and adjacent rock ballast). The impact would also be temporary because kelp would be able to recolonize the rock ballast upon completion of construction. Furthermore, replacement of rock ballast would increase hard substrate and thus benefit benthic habitat. Overall, direct and indirect impacts on kelp forests associated with the rehabilitation work for Alternative 4 (the recommended alternative) would be minimal and temporary.

Section 3.3.2.3, under Existing Ocean Outfalls, second paragraph, is revised in the final EIR/EIS as follows:

> Alternatives 1 through 4 (Project) would include improvements to the existing ocean outfalls, such as joint repairs and re-ballasting. The re-ballasting work would occur on the existing 72-, 90- and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A small derrick barge would be used to place the ballast rock around the outfalls and support the joint repair work. Joint repairs would involve temporarily removing some of the existing ballast rock from around the outfall to fully expose the joint being repaired. <u>A team of divers would repair an estimated 10 to 40 joints and hand-shovel approximately 2 cubic yards of sediment from each joint. Mechanical dredging would not be required.</u> A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with

concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. ~~c~~Cathodic protection would also be restored or added where necessary. The marine vessels required for this work are listed in Table 3-10. The majority of the construction work would be based on one 10-hour shift per day, 5 days per week. It is estimated that approximately eight to ten construction workers would be needed for the rehabilitation work. Joint repairs and transport of construction workers would require a work vessel and crew vessel operating one daily round-trip for approximately 1 month, which would most likely deploy from the Port of Los Angeles. All of the work including mobilization, construction, and demobilization would take approximately 9 months.

Section 13.2.2.1, under Existing Ocean Outfalls, Biological Resources, Marine Vegetation, is revised in the final EIR/EIS as follows:

Giant kelp beds occur inshore of the existing ocean outfalls, though the sizes of the beds have changed over time. Historic trends for kelp beds in the area of the existing ocean outfalls are presented in Appendix 13-A. In 2008, approximately 150 acres of kelp were reported in the White Point area~~.~~ at water depths ranging from approximately 40 to 70 feet. Areas shoreward of 40-foot depths do not support kelp due to wave action, sea urchin grazing, and the absence of hard substrate. There is no eelgrass located at the existing ocean outfalls or within the general vicinity of the existing ocean outfalls. Eelgrass is usually found at depths between +6.0 and -22.0 feet mean lower low water level (MLLW) (+2.4 and -6.6 meter MLLW) (Phillips 1984:4).

Section 13.4.3.2, under Impact MAR-4, Riser/Diffuser Area – San Pedro Shelf, Construction, CEQA Analysis, Marine Habitat, after the first paragraph, is revised in the final EIR/EIS to include the following paragraph:

As discussed in Section 13.2.2.1, kelp can be found in the White Point area at water depths ranging from approximately 40 to 70 feet. The proposed re-ballasting work would occur at water depths ranging between approximately 20 and 50 feet. Thus, there would be some overlap between the general work area and the kelp habitat from approximately 40 feet to 50 feet. As a result, re-ballasting activities could impact kelp growing on the outfall pipes and the adjacent rock ballast. However, the impact would be minimized because the proposed method of placing the new ballast rock ensures that the work would be limited to the existing footprint of the outfalls (i.e., pipeline and adjacent rock ballast). The impact would also be temporary because kelp would be able to recolonize the rock ballast upon completion of construction. Furthermore, replacement of rock ballast would increase hard substrate and thus benefit benthic habitat. Overall, direct and indirect impacts on kelp forests would be minimal and temporary. Therefore, impacts would be less than significant.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-6

The comment provides an introduction to the EPA's specific comments.

See Responses to Comments A12-8 through A12-26.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-7

The comment provides instructions for distribution of the final EIR/EIS.

The final EIR/EIS will be distributed as requested.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-8

The comment requests that mitigation measures be implemented on a schedule concurrent with the commencement of construction of the project and that additional mitigation measures be included.

Construction mitigation measures associated with both the project and the program were analyzed in the draft EIR/EIS based on implementation at the start of respective construction activities. The Sanitation Districts will incorporate the mitigation measures into the contract bid specifications. Section 5.4.3.1, under Impact AQ-2, CEQA Impact Determination, Mitigation, is revised in the final EIR/EIS as follows:

> Mitigation measures for construction were derived, where feasible, from SCAQMD mitigation measure tables (SCAQMD 2007b), LAHD Construction Guidelines (also part of the Port of Los Angeles' Clean Air Action Plan), and the Sanitation Districts. The following mitigation measures would <u>be implemented at the start of the construction activity to</u> reduce criteria pollutant emissions associated with construction.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-9

The comment requests that all engines used for construction be Tier 4, when available, and that BACT be used for activities that occur prior to Tier 4 standards availability.

As previously described in Response to Comment A12-4, the Sanitation Districts are a regional public works agency that awards projects to contractors following an open bid process prescribed by state law. For construction projects, the equipment and vehicles are owned and operated by contractors. The contractor bears the responsibility for the regulatory compliance of its fleet and equipment, and makes the decisions regarding fleet mix and replacement schedule. The specifications and engineering drawings that are developed for the bid advertisement cannot be based on the presumption that certain technologies or equipment may be available at the start of construction.

Project construction is anticipated to start in 2015. As noted previously, only equipment or engines that are known with certainty to be in use or available at the start of construction can be specified at this time. As indicated in Section 5.3.1.2 of the draft EIR/EIS, the manufacture of Tier 4 engines is being phased in from 2008 to 2015. Consequently, it is uncertain to what extent contractor fleets will include these diesel engines when construction begins. The mitigation measures proposed exceed CARB's fleet turnover compliance schedule.

Several mitigation measures would be incorporated into the project construction to lessen air quality and health risk impacts:

- MM AQ-2a (same as MM AQ-3a) specifies that heavy-duty diesel trucks used during construction with a gross vehicle weight greater than 26,000 pounds will have a 2007 model year

engine or newer. Table 5-11 of the draft EIR/EIS showed that in 2015 only trucks with pre-1994 engines need to be replaced. MM AQ-2a goes beyond this regulatory requirement by requiring a cleaner engine. In response to EPA's request to lower the gross vehicle weight threshold in MM AQ-2a to 14,000 pounds, the mitigation measure is revised in the final EIR/EIS as follows:

> MM AQ-2a. All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than ~~26,000~~14,000 pounds will ~~include a particulate matter trap or~~have a 2007 model year engine or newer, or be equipped with a particulate matter trap.

This revision also applies to MM AQ-3a and MM GHG-1a. This revision applies to Alternatives 1 through 4 and elsewhere in the final EIR/EIS and final Executive Summary where MM AQ-2a, MM AQ-3a, and MM GHG-1a occur.

- MM AQ-2b would require off-road diesel equipment used during construction to be equipped with Tier 3 engines and a diesel particulate matter trap. This would exceed EPA rules for in-use off-road diesel engines and CARB compliance schedule and NO_X targets for off-road diesel fleets (Table 5-12 of the draft EIR/EIS).
- MM AQ-2b specifies the use of Tier 3 engines at a minimum regardless of fleet size and ahead of CARB's implementation schedule for in-use equipment. CARB's In-Use Off-Road Diesel Vehicle Regulation requires that fleets meet a Tier 3 equivalent average target at a date later than required for MM AQ-2b. The EPA Tier 3 NO_X standard is 3.5 grams per brake horsepower-hour (g/bhp-hr) NO_X + non-methane hydrocarbons (NMHC) NMHC (3.3 NO_X) for equipment less than 100 horsepower (hp) and 3.0 g/bhp-hr NO_X + NMHC (2.85 NO_X) for equipment greater than 100 hp. (CARB 2011a.)
- MM AQ-2e would route trucks away from congested streets or sensitive receptor areas as feasible. This measure is not required by regulation, but the Sanitation Districts attempt to minimize project impacts where feasible.
- MM AQ-2f would require using the cleanest harbor craft available at the Port of Los Angeles for the project.
- MM AQ-2g would require a Tier 4 engine for the tunnel locomotive, which would exceed regulatory requirements.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-10

The comment requests that all harbor crafts used for construction have a Tier 4 engine and, if not available locally, that one be transported from other west coast states before allowing the use of a lower tier harbor craft.

The draft EIR/EIS was analyzed with Tier 3 harbor craft engines for both the unmitigated and mitigated scenarios. This reflects the harbor craft repowering schedule shown under Control Measure 4.4.1 in the 2010 Update of the San Pedro Bay Ports Clean Air Action Plan (Port of Los Angeles and Port of Long Beach 2010:134), which was developed jointly by the Port of Los Angeles and Port of Long Beach. It is anticipated that rehabilitation work for the existing ocean outfalls would begin in 2019 and take approximately 4 to 6 months. MM AQ-2f goes above and beyond the CARB requirements for in-use harbor craft. If a Tier 4 harbor craft is available at the Port of Los Angeles when the rehabilitation work begins, it would be used.

The Northwest Ports Clean Air Strategy for the Ports of Seattle and Tacoma and the Vancouver Port Authority (Port of Seattle et al. 2007) does not show any Tier 3 or Tier 4 engines in its harbor vessel repowering schedule. CARB has more stringent requirements than the other western states so the availability of Tier 4 harbor crafts outside of California is unlikely. Additionally, it would be impractical to transport a harbor craft with a Tier 4 engine from another west coast state for a 4 to 6 month project.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-11

The comment requests a discussion regarding the potential use of an electric locomotive for tunnel construction.

An electric locomotive was considered but deemed infeasible for several reasons, including: (1) the inability to stay charged given the number of trips back and forth and the tunnel distance involved; (2) the safety hazard of an in-tunnel charging station given the potential of encountering water during tunnel construction; and (3) the need for a reliable, uninterrupted power source to evacuate personnel in the event of an emergency.

MM AQ-2g directly addresses the highest emissions source of NO_X of the proposed project by utilizing the cleanest locomotive engine commercially available. This mitigation would exceed the EPA emission standards applicable to in-use locomotive engines.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-12

The comment requests including an emissions standard table similar to Table 5-8 of the draft EIR/EIS for on-road engines and a comparison of emission levels between alternative-fuel and diesel engines.

A table summarizing EPA's on-road engine standards was not deemed necessary because Section 5.3.1.3 of the draft EIR/EIS already discussed these standards. It should be noted that CARB's On-Road Heavy-Duty Diesel Vehicles Regulation (CARB 2011b) incorporates EPA's on-road engine standards and stipulates a compliance schedule for fleets, as shown in Tables 5-10 and 5-11 of the draft EIR/EIS. It should be further noted that EPA's on-road engine standards and CARB's regulatory requirements are incorporated into the fleet averages used in emission calculations.

MM AQ-2d requires the evaluation of alternative fuel engines for construction. It is premature to include an emissions comparison table between alternative-fuel and diesel engines until a commercially proven engine is selected for the specific construction application and on-road operational use, and the manufacturer's emissions data is obtained.

As previously discussed in Response to Comment A12-4, the potential impacts from the operational element of biosolids truck hauling were determined to be less than significant without mitigation. No new mitigation measures are necessary. The Sanitation Districts, however, will continue ongoing efforts to promote feasible low emissions technologies and alternative fuel vehicles for hauling biosolids.

The comment also requests a discussion on using on-road engines meeting the 0.2 g/bhp-hr NO_X emission standard for construction and operations.

Although EPA on-road standards allowed manufacturers to phase in compliance with this standard, and according to EPA, 100 percent of vehicle sales met the standards as of 2010, this is not reflective of available vehicle fleets. CARB's On-Road Heavy-Duty Diesel Vehicles Regulation (CARB 2011b) incorporates EPA's on-road engine standards and stipulates a compliance schedule for fleets, as shown in Tables 5-10 and 5-11 of the draft EIR/EIS. CARB's inventory, available at the time of the analysis, was used to quantify fleet averages for on-road vehicles reflective of the anticipated activity years, for the unmitigated scenarios. As previously described in Response to Comment A12-4, MM AQ-2a and MM AQ-3a require that trucks used during construction have 2007 model year engines or newer, or be equipped with a particulate matter trap. MM AQ-2d requires the evaluation of alternative fuels for off-road construction equipment as well as for on-road trucks used at the time of construction. These mitigation measures incorporate EPA standards for new on-road engines and go beyond CARB requirements for in-use on-road engines. As previously discussed, the potential impacts from the operational element of biosolids truck hauling were determined to be less than significant without mitigation.

The comment also requests that MM AQ-2a (and MM AQ-3a) stipulate the use of the cleanest on-road emission standards available for diesel trucks.

MM AQ-2a and MM AQ-2d (same as MM AQ-3a and MM AQ-3d, respectively) incorporate EPA standards and go beyond CARB requirements for in-use on-road engines. The use of the cleanest available on-road engines, specifically the use of all 2007 or newer on-road engines, is stipulated in MM AQ-2a (same as MM AQ-3a).

The comment also requests that MM AQ-2a (and MM AQ-3a) be updated to apply to all on-road heavy-duty diesel trucks greater than 14,000 pounds versus the current 26,000 pounds mentioned in the draft EIR/EIS.

It was anticipated in the draft EIR/EIS that haul trucks used during construction and operational activities would have a gross vehicle weight rating (GVWR) greater than 26,000 pounds. However, as discussed in Response to Comment A12-4, MM AQ-2a and MM AQ-3a are revised in the final EIR/EIS to reflect a GVWR of 14,000 pounds or greater.

The comment also requests that the tables in the Chapter 5 impact analysis be updated in the final EIR/EIS to reflect the additional criteria pollutant emissions reductions that would result from using the cleanest available on-road engines for each project construction and program operational element.

Table 5-16 of the draft EIR/EIS delineated the construction and operational emission sources for each element under program and project. Tables 5-30, 5-31, 5-35, 5-41, 5-42, 5-47, 5-48, 5-50, 5-55, 5-56, and 5-58 show emissions after mitigation that would occur under each alternative. With revision of MM AQ-2a and MM AQ-3a, which expand the applicability of emissions controls to a wider range of vehicles, emissions would be slightly lower than what was reported in these tables. However, NO_X emissions would still exceed the significance threshold.

The comment also requests that the final EIR/EIS describe expected final disposal locations for excavated materials and include criteria that would minimize overhaul hauling distances.

For excavated materials suitable for backfill in construction projects, potential disposal locations include San Pedro and surrounding areas. For excavated materials suitable for daily cover at landfills, potential reuse locations are in Los Angeles and Orange Counties. For excavated materials requiring special disposition, the potential disposal location would be Buttonwillow Landfill in Kern County, as worst case,

or a local facility permitted under the Resource Conservation and Recovery Act. The draft EIR/EIS conservatively estimated that excavated materials would be disposed at locations 60 miles from the construction sites. Local beneficial use of the excavated materials is preferred over truck hauling to longer distances.

The comment also requests that the final EIR/EIS provide a quantification of (1) the additional air quality impacts associated specifically with the trucking of the excavated material and (2) the air quality benefits expected to be achieved by specific mitigation measures.

The draft EIR/EIS analyzed and quantified impacts associated with trucking of excavated materials as well as the air quality benefits associated with mitigation measures. For example, trucking emissions were included for each element in Table 5-53 of the draft EIR/EIS, except for onshore tunnel alignment where emissions were due to the tunnel locomotive. Including each type of emissions source for each element would make the tables difficult to read. The appendices contain the detailed calculations.

Overall, as stated above, MM AQ-2a and MM AQ-3a are revised in the final EIR/EIS to reflect a GVWR of 14,000 or greater.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-13

The comment requests that the final EIR/EIS discuss the Ports of Long Beach and Los Angeles' Clean Trucks Programs (Port of Los Angeles 2012) and how their success could be transferred to truck applications proposed for construction of the Clearwater Program, as well as the fleet of trucks used to transport biosolids from the Joint Wastewater Pollution Control Plant (JWPCP).

The Port's Clean Trucks Program banned drayage trucks older than 2007 on Port property since 2012. The use of 2007 or newer trucks for construction is considered to be a mitigation measure by the Port of Los Angeles and the Port of Long Beach (2010). MM AQ-2a (same as MM AQ-3a) parallels the use of 2007 and newer trucks for mitigated construction activities.

As previously discussed in Response to Comment A12-4, the potential impacts from the operational element of biosolids truck hauling were determined to be less than significant without mitigation. No new mitigation measures are necessary. The Sanitation Districts, however, will continue ongoing efforts to promote feasible low emissions technologies and commercially available alternative fuel vehicles for hauling biosolids.

The comment also requests that the final EIR/EIS discuss incentives and require continuous improvement for trucks servicing the construction sites and the JWPCP.

In order to implement MM AQ-2d, commercially available construction equipment and heavy-duty trucks that use alternative fuels will be evaluated for their use during construction and operation prior to finalizing the bid specifications. A periodic review of these technologies will be conducted. In addition, if a CARB-certified technology with a better emissions profile than the existing mitigation measures is identified, it will be evaluated. As previously discussed, the Sanitation Districts will continue ongoing efforts to promote feasible low emissions technologies and commercially available alternative fuel vehicles for hauling biosolids.

The comment also requests that the final EIR/EIS include a mitigation measure for the phase-in of zero emission trucks and a periodic review of new technologies and regulations specific to heavy-duty trucks.

As previously discussed in Response to Comment A12-4, the potential impacts from the operational element of biosolids truck hauling were determined to be less than significant without mitigation. No new mitigation measures are necessary. The Sanitation Districts, however, will continue ongoing efforts to promote feasible low emissions technologies and commercially available alternative fuel vehicles for hauling biosolids.

The Ports' Clean Truck Program is a long-term program intended to address the more than 20,000 daily truck trips associated with the Port of Los Angeles. Construction for the Clearwater Program, in turn, adds truck trips for a short term, and the number of trucks is orders of magnitude smaller by comparison. Based on this much smaller number of truck trips, it is inappropriate to utilize the Ports' Clean Truck Program for the project.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-14

The comment requests that the final EIR/EIS clarify the calculations used to adjust the localized significance threshold (LST) based on the federal standard. The comment is also concerned that localized emission impacts could constitute a disproportionately adverse impact on minority and low-income populations.

The analysis in the draft EIR/EIS relied on LSTs developed by the South Coast Air Quality Management District (SCAQMD), which are part of SCAQMD's environmental justice program. LSTs were designed to protect communities from the localized effects of air quality impacts caused by projects. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, thereby not resulting in significant adverse localized air quality impacts. The LSTs are conservative, providing public agencies with a relatively simple method of evaluating ambient air pollutant concentrations without having to conduct more complicated air dispersion modeling.

SCAQMD's LST methodology for nitrogen dioxide (NO_2) is based on the California 1-hour ambient air quality standard. In 2010, the EPA created a new federal NO_2 1-hour ambient air standard that is lower than the California standard. Because the SCAQMD has not revised their LST methodology to reflect the new federal standard, a different approach was warranted in addressing localized NO_2 impacts as they apply to the federal 1-hour standard.

The analysis determined the NO_X federal screening threshold by scaling SCAQMD NO_X LST by the ratio of the federal 1-hour National Ambient Air Quality Standard (NAAQS) to the California Ambient Air Quality Standard (a ratio of 0.10 to 0.18).

The *de minimis* level for NO_X stipulated in the federal general conformity rule could also be used as the federal screening threshold for NO_X. The federal general conformity rule ensures that federal actions do not cause or contribute to a new violation of the NAAQS, do not cause additional or worsen existing violations of the NAAQS, and do not delay attainment of the NAAQS. The conformity regulation stipulates *de minimis* emission levels based on the type and severity of the nonattainment designation. If the federal action would result in emissions below the *de minimis* levels, the action is determined to conform; that is, it would not cause or contribute to a violation of the NAAQS. The South Coast Air Basin (SCAB) is in extreme nonattainment for ozone, for which NO_X is a precursor, and as such is subject to a 10 tons-per-year *de minimis* level (EPA 2010). The general conformity *de minimis* level of 10 tons per year, therefore, could be used to evaluate NO_X impacts as they relate to the NAAQS. If the general

conformity *de minimis* level of 10 tons per year were used, impacts from program construction, project construction, and program operation would not result in a significance determination different from the EIR/EIS. It should also be noted that the SCAB is considered a maintenance area for NO_2 and as such is subject to a 100 tons-per-year *de minimis* level.

As discussed in Chapter 15 of the draft EIR/EIS, the study areas for the tunnel alignment and Royal Palms shaft site for the recommended alternative (Alternative 4) do not have a greater presence of minority or low-income populations in comparison to the reference community. The study area around the JWPCP West shaft site does have a greater presence of minority and low-income populations in comparison to the reference community. However, as described in Chapter 5, under Impact AQ-3, implementation of MM AQ-3a through MM AQ-3e and MM AQ-3g would reduce construction impacts for the onshore tunnel and the JWPCP West and Royal Palms shaft sites to below the SCAQMD LSTs for all pollutants for the recommended alternative (Alternative 4). Residual impacts would be less than significant. Therefore, the recommended alternative would not result in significant, disproportionately high, or adverse localized emissions impacts on minority or low-income populations. Environmental justice-related impacts would be less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-15

The comment requests a discussion of potential non-cancer health problems linked to particulate pollution, including diesel particulates.

Non-cancer health issues associated with criteria pollutants, including particulate matter less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$), were described in Table 5-3 of the draft EIR/EIS. No revisions to the final EIR/EIS are necessary. For additional information, the California Environmental Protection Agency's (CalEPA's) Office of Environmental Health Hazard Assessment (OEHHA) has a fact sheet that describes the health effects of diesel exhaust (CalEPA OEHHA 2012).

The comment also requests a discussion and analysis of how toxic air contaminants generated during project construction contribute to the acute hazard and total hazard indices.

OEHHA has not developed an acute hazard index for diesel particulate matter, so the short-term construction-related effects of diesel particulate cannot be estimated. Based on CARB's fact sheet, Health Effects of Diesel Exhaust (CARB 2012), the diesel-particulate levels estimated to be present in ambient air in 2000 result in a potential cancer risk of over 540 in 1 million over a 70-year lifetime.

LSTs were used to assess whether or not there would be any significant adverse localized air quality impacts associated with construction. Localized $PM_{2.5}$ impacts associated with program construction and project construction were found to be below the level of significance. Because health impacts associated with short-term exposure are linked to ambient $PM_{2.5}$ concentrations, it is appropriate to define the trigger to quantify such impacts as the finding of significance for the $PM_{2.5}$ ambient concentration impact. Therefore, a less than significant finding for the $PM_{2.5}$ ambient concentration impact would not trigger a quantification of short-term impacts associated with construction activities since the impact has already been found not to be significant.

The comment suggests altering the construction schedule or limiting the use of high emitting equipment as a mitigation to achieve the lowest emissions possible.

It would be infeasible to halt tunnel construction or use equipment intermittently. A longer construction schedule would also result in longer-term impacts. The cleanest engine (Tier 4) would be used for the tunnel locomotive, which is the highest emissions source for the project.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-16

The comment suggests adding certain greenhouse gas (GHG) mitigation measures to the construction and bid specifications.

Over the years, the Sanitation Districts have developed cost-effective, environmentally sound programs to reduce GHG emissions. As described in Chapter 1 of the draft MFP, the Sanitation Districts, having successfully pioneered renewable energy technologies at their wastewater and solid waste facilities, are leaders in the production and use of green power. The production of renewable energy from biogas conserves fossil fuels and reduces GHG emissions. In 2010, the Sanitation Districts produced 750,000 megawatt hours (MWh) of power offsetting 220,000 metric tons of carbon dioxide equivalents (CO2e). This is enough renewable energy to power 120,000 homes. (That same year, the EPA recognized the Sanitation Districts as one of the top five "Green Power Partnership" local government leaders in the nation with respect to annual green power usage.) As further described in Chapter 1 of the draft MFP, approximately 84 million gallons per day (93,000 acre-feet per year) of recycled water was reused at 640 sites throughout Los Angeles County in 2010. Assuming this water would otherwise have been supplied by imported water, these recycled water efforts have avoided approximately 250,000 MWh of annual power consumption, offsetting 73,000 metric tons of CO2e. In addition, the Sanitation Districts recently cooperated in the installation of a public CNG refueling station at the JWPCP and have planted trees around the JWPCP and other facilities in the Joint Outfall System, which is one of EPA's suggested mitigation measures.

Nonetheless, based on this comment, the final EIR/EIS is revised to include the following mitigation measures in Chapter 9:

> <u>MM GHG-1f. Use energy efficient lighting systems, such as LED technology, during construction, where feasible.</u>
>
> <u>MM GHG-1g. Use lighter-colored pavement during construction, where feasible.</u>
>
> <u>MM GHG-1h. Recycle construction debris to the maximum extent feasible.</u>

The additional mitigation applies to Alternatives 1 through 4 (Project) and is added elsewhere in the final EIR/EIS and final Executive Summary where GHG mitigation for the project occurs.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-17

The comment requests consideration of all feasible mitigation strategies, monitoring measures, and the preferences expressed by the local community to reduce potential environmental justice and cumulative health impacts.

Section 5.2.3.2 of the draft EIR/EIS acknowledged the carcinogenic risk posed by ambient diesel particulate around the Port of Los Angeles, identified in the MATES III study. In recognition of the

existing ambient air quality, mitigation measures were included that went beyond the existing regulatory requirements. Additionally, a Tier 4 engine is proposed for the locomotive engine, which is the highest emissions source for the project.

As discussed in Chapter 15 of the draft EIR/EIS, the study areas for the tunnel alignment and Royal Palms shaft site for the recommended alternative (Alternative 4) do not have a greater presence of minority or low-income populations in comparison to the reference community. The study area around the JWPCP West shaft site does have a greater presence of minority and low-income populations in comparison to the reference community. However, as described in Chapter 5 under Impact AQ-3, implementation of MM AQ-3a through MM AQ-3e and MM AQ-3g would reduce construction impacts for the onshore tunnel and the JWPCP West and Royal Palms shaft sites to below the SCAQMD LSTs for all pollutants for Alternative 4 (Project). Residual impacts would be less than significant. Therefore, the recommended alternative would not result in significant, disproportionately high, or adverse localized emissions impacts on minority or low-income populations. Environmental justice-related impacts would be less than significant.

The draft EIR/EIS used the SCAQMD's very conservative LST methodology to ensure that public health is protected during project construction. The potential local air quality impacts caused by project construction were determined to be less than significant after implementing the mitigation measures.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-18

The comment requests that, in general, an analysis of impacts on children be included and, specifically, that the final EIR/EIS include child care facilities as non-resident sensitive receptors when assessing localized air quality impacts from construction activities.

The LST analysis in the draft EIR/EIS considered child care facilities as non-resident sensitive receptors.

The comment also requests that the final EIR/EIS describe the specific location for all staging areas to be used during construction at each shaft site, and confirm that these locations would result in the least environmental impacts and disruption to sensitive receptors, including schools and child care centers.

The proposed staging areas would be located within the footprint of the shaft sites or facilities described in the draft EIR/EIS. Impacts from activities at these locations on surrounding sensitive receptors were addressed in the draft EIR/EIS. As described in Table 5-62 of the draft EIR/EIS, LST impacts would be less than significant with mitigation.

The comment also requests that the final EIR/EIS consider smaller footprints for the proposed shaft sites and construction schedules that would minimize impacts on such sensitive receptors.

The comment is noted. The footprint is determined by the space needed to lower the tunnel boring machine and equipment through the shaft, the size and type of equipment needed for construction, the need for construction equipment and vehicles to maneuver or rotate, and other factors. The construction schedules provided in Table 3-13 of the draft EIR/EIS represent a worst-case scenario with respect to overlapping construction of project elements. This ensures a conservative approach for analyzing potential project impacts because it assumes project activities are occurring concurrently, thus resulting in greater air emissions and traffic impacts.

The comment also requests that measures identified in the Draft Schools Environmental Health Guidelines (EPA 2012) for reducing exposure of environmental hazards at schools be discussed.

The EPA's Draft Schools Environmental Health Guidelines are draft voluntary guidelines intended as BMPs to be implemented by school facilities. The guidelines include the following measures to be implemented by states and school facilities.

- Promote the establishment of local school environmental management systems that consider student and staff health and safety in all practices related to design, construction, renovation, operations, and maintenance of schools and school grounds.
- Recommend that new and renovated school facilities are designed and built to ensure a sustainable, healthy environment that also conserves energy and saves money.
- Ensure that environmental factors are considered in school siting decisions as recommended in the EPA's School Siting Guidelines.
- Provide support to schools that are identified as most in need of critical infrastructure repair and/or maintenance.
- Promote energy efficient products and practices.
- Encourage environmentally safe purchasing policies for school districts.

Implementation of these guidelines by the project proponent would not be applicable because the Sanitation Districts have no authority over schools nor does the Clearwater Program involve construction or renovation of schools.

The comment also requests that the final EIR/EIS provide a discussion of current rates of asthma and how construction emissions may impact children's health and refers to the 2007 Los Angeles County Health Survey.

In 2009, the Los Angeles County Department of Public Health released a report entitled Key Indicators of Health (Los Angeles County Department of Health 2009) indicating that, in 2007, an average of 9.5 percent of children of ages 0 through 17 in South Bay had asthma. This is a decline from 2005, which was 11 percent.

The 2007 Los Angeles County Health Survey was a population-based telephone survey that provided information concerning the health of Los Angeles County residents. The data provided by the survey is intended for assessing health-related needs of the population, for program planning and policy development, and for program evaluation. The data is not linked to medical records and is based on self-reported data from a randomly selected sample of Los Angeles County population.

The data, although useful for assessing general rates of asthma in 2007 for state and county health planning purposes, is not meaningful in assessing how construction-related, project-specific air emissions may affect children in the direct vicinity of the proposed project.

It should be noted that asthma is often linked to ambient $PM_{2.5}$ concentrations. The draft EIR/EIS found that $PM_{2.5}$ impacts associated with program and project construction would be below the level of significance even prior to implementation of the mitigation measures. Therefore, a less than significant finding for the $PM_{2.5}$ ambient concentration impact would not trigger a quantification of impacts associated with temporary construction activities because the impact has already been found to be less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-19

The comment requests additional analysis of aerially deposited lead and asbestos in the surface soils around the JWPCP East, JWPCP West, and TraPac shaft sites.

As discussed in Chapter 10 of the draft EIR/EIS, as part of the construction process, excavated material would be monitored and tested at the shaft sites prior to disposal, and disposal of contaminated materials, if found, would comply with all federal, state, and local regulations. Therefore, impacts related to contaminated soil were found to be less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-20

The comment states, in general, that the draft EIR/EIS did not sufficiently characterize project impacts on the Palos Verdes Shelf Superfund Site under each alternative and did not describe how such information was used to support the selection of the recommended (preferred) alternative.

As shown in Table 2 in Appendix 1-B of the draft EIR/EIS, from late 2007 to mid-2011, the Sanitation Districts conducted four scoping meetings with the EPA, Region 9, two of which were attended by the Corps as well. A topic of discussion at each of these meetings was the potential environmental impacts of the proposed riser/diffuser construction and existing outfall rehabilitation on the Palos Verdes Shelf Superfund Site. In addition, the Sanitation Districts' Ocean Monitoring and Research Group had several coordination meetings with the EPA's Superfund Group during the Clearwater Program planning process. Over the course of these scoping and coordination meetings, the EPA indicated that the proposed riser/diffuser for Alternative 1 is beyond the Palos Verdes Shelf Superfund Site study area; the proposed riser/diffuser for Alternatives 2 and 3 is within the Palos Verdes Shelf Superfund Site study area, but in an area of low concern with respect to DDT/PCB sediment concentrations; and the proposed existing outfall rehabilitation under Alternatives 1, 2, 3, and 4 is within the study area for the Palos Verdes Shelf Superfund Site, but would occur primarily in ocean depths ranging between 20 and 50 feet, which is much shallower than the EPA's area of concern with respect to high DDT/PCB sediment concentrations that start at ocean depths greater than 100 feet. The input received from the EPA was used in the screening of each of the viable alternatives and the subsequent ranking of the feasible alternatives. As described in Section 6.3.4.2 of the draft MFP, five weighted screening parameters were used to evaluate the viable project alternatives for feasibility. One of the criteria – constructability – considered hazards (e.g., potential disturbance to areas of high DDT/PCB sediment concentrations during construction) and institutional feasibility (e.g., EPA approval to construct within the Palos Verdes Shelf Superfund Site study area). Another of the criteria – operational considerations – considered potential disturbance to areas of high DDT/PCB sediment concentrations during ocean outfall operation. Therefore, the alternatives analysis presented in the draft MFP and the draft EIR/EIS considered the potential construction and operation impacts of the viable project alternatives on the Palos Verdes Shelf Superfund Site, and the results of the analysis were factored into the aggregate weighted scores presented in Table 6-28 of the draft MFP, which ultimately established the ranked feasible alternatives presented in Table 6-29 of the draft MFP. The highest ranked alternative was the recommended alternative (Alternative 4).

In addition, this comment specifically recommends several changes to the document.

The first specific recommendation is to include avoidance and impact minimization of the Palos Verdes Shelf Superfund Site as one of the screening criteria listed in Section 3.3 of the draft EIR/EIS.

As previously described, minimization of impacts on the Palos Verdes Shelf Superfund Site was considered under two of the screening criteria – constructability and operational considerations. Both of these criteria, which were listed on Figure 3-2 of the draft EIR/EIS, were defined in Section 6.3.4.2 of the draft MFP. The second specific recommendation is to include a discussion on how the construction, operation, rehabilitation, and maintenance activities would impact the Palos Verdes Shelf Superfund Site under each alternative, and identify any potentially necessary remedial actions.

Section 13.2 and Appendix 13-A of the draft EIR/EIS provided a comprehensive description of the marine environmental setting on the San Pedro and Palos Verdes Shelves, including DDT/PCB sediment concentrations. Figure 13-4 of the draft EIR/EIS showed the location of the existing ocean outfalls and the proposed riser/diffuser area for each alternative in relationship to the Palos Verdes Shelf Superfund Site study area. Section 13.4 of the draft EIR/EIS provided a systematic evaluation of the construction and operation impacts for each of the alternatives on the marine environment. Potential impacts on the Palos Verdes Shelf Superfund Site study area were specifically addressed in Sections 13.4.3.2, 13.4.4.2, 13.4.5.2, and 13.4.6.2 of the draft EIR/EIS. Any potentially necessary remedial actions relating to DDT/PCB contaminated sediments were included in mitigation measures, specifically MM MAR-1a and MM MAR-1b.

The third specific recommendation is to discuss potential operational environmental effects due to disturbance of contaminated sediments that could result from effluent discharge and changes in currents as a result of a new diffuser on the seafloor, including a discussion of modeling and monitoring results used to determine environmental effects.

As shown on Figure 13-5 of the draft EIR/EIS, prevailing currents in the project vicinity would run parallel to the coast in a northwesterly direction. The proposed diffusers for Alternatives 1, 2, and 3 would be oriented in the same direction, and the proposed diffusers for Alternatives 2 and 3 would be closer to the area of concern with respect to high DDT/PCB sediment concentrations (approximately 1 mile at its closest point) than the proposed diffuser for Alternative 1. Effluent would be discharged perpendicular to the prevailing current at a low velocity (approximately 2 feet per second) from a series of ports located along the entire length of each diffuser leg. Once discharged, the effluent would typically begin to rise (due to its higher temperature and lower salinity than that of the ambient ocean water) until it reaches the thermocline about 10 to 30 meters below the surface (approximately 30 to 100 feet). The prevailing currents would then carry the effluent toward the area of high DDT/PCB sediment concentrations and suspended solids would settle out over time, some of which could further cover the buried DDT/PCB. Furthermore, given the orientation of the proposed diffusers for Alternatives 1, 2, and 3 with respect to the prevailing currents, any potential down-current turbulence moving in the direction of the area of high DDT/PCB sediment concentrations would be generated primarily by the cross-section of the diffuser, not the 8,000-foot diffuser length. The cross-section of the proposed diffuser was shown on Figure 3-25 of the draft EIR/EIS. The maximum height, which is limited to the very top of the diffuser pipe, would be approximately 13 feet above the seafloor. The maximum width of the cross-section would be 54 feet, most of which is 5 feet or less above the seafloor. As described in Section 13.2.2.1 of the draft EIR/EIS, based on a 9-year study conducted by the Sanitation Districts, currents on the Palos Verdes Shelf at a depth of 175 feet (the location and depth of the diffuser proposed for Alternatives 2 and 3) averaged 0.3 feet per second, with a maximum current speed of 2.3 feet per second recorded in 2001. Given the small cross-section of the proposed diffusers, the relatively low current speeds at the diffuser locations and depths, and the 1-mile distance between the tip of the closest diffuser leg and the edge of the higher DDT/PCB sediment concentrations, there would be minimal or no potential for the proposed

diffusers to alter currents in the area of concern. Therefore, additional modeling and monitoring of potential disturbance to contaminated sediments are not warranted.

The fourth specific recommendation is that the final EIR/EIS should evaluate the alternatives with the recognition that two of the offshore tunnel alignments have the potential to cause unavoidable, but mitigable, impacts on the Palos Verdes Superfund Site.

Section 13.4 of the draft EIR/EIS provided a systematic evaluation of the construction and operation impacts of each of the alternatives on the marine environment. Potential impacts on the Palos Verdes Shelf Superfund Site study area were specifically addressed in Sections 13.4.3.2, 13.4.4.2, 13.4.5.2, and 13.4.6.2 of the draft EIR/EIS. Any potentially necessary remedial actions relating to DDT/PCB contaminated sediments are addressed by MM MAR-1a and MM MAR-1b. After mitigation, the draft EIR/EIS concluded that the impacts would be less than significant.

The fifth specific recommendation is that Chapter 10 should discuss contaminated sediment at the Palos Verdes Shelf Superfund Site and disclose that Alternatives 2 and 3 terminate on the Palos Verdes Shelf Superfund Site.

Section 10.1 of the draft EIR/EIS referred the reader to Chapter 13 for a discussion of impacts associated with hazards and hazardous materials resulting from construction of the proposed riser/diffuser. Therefore, Chapter 10 included no such discussion. Contaminated sediment on the Palos Verdes Shelf was discussed in Sections 13.2.2.1, 13.4.3.2, 13.4.4.2, 13.4.5.3, and 13.4.6.3 as well as in Appendix 13-A of the draft EIR/EIS. To date, however, the EPA has not clearly delineated the boundaries of the Palos Verdes Shelf Superfund Site. The EPA has instead provided figures showing the study area for the Palos Verdes Shelf Superfund Site (e.g., Figure 1-1 of the Final Palos Verdes Shelf Superfund Site Remedial Investigation Report [EPA et al. 2007]; Figure 1-1 of the Palos Verdes Shelf Superfund Site Operable Unit 5 of the Montrose Chemical Corp. Superfund Site Final Feasibility Study [EPA et al. 2009]; and Figure 1 of the Interim Record of Decision, Palos Verdes Shelf Operable Unit 5 of the Montrose Chemical Corporation Superfund Site [EPA 2009]). Consequently, to maintain consistency with the EPA's most recently published documents, Chapter 13 of the draft EIR/EIS referred to the "Palos Verdes Shelf Superfund Site DDT/PCB study area" or the "EPA-designated DDT/PCB study area." Figure 13-4 clearly showed that Alternatives 2 and 3 terminate within the Palos Verdes Shelf Superfund Site DDT/PCB study area. The sixth specific recommendation is that Figure 13-4 of the draft EIR/EIS include the extent of DDT and PCB contamination and the location of the proposed re-ballasting of the existing ocean outfalls.

In response to this recommendation, Figure 13-4 is revised in the final EIR/EIS to include the location of the proposed re-ballasting of the existing ocean outfalls. Furthermore, two new figures are added to Chapter 13, Figures 13-7 and 13-8. Figure 13-7 shows the extent of DDT contamination within the Palos Verdes Shelf Superfund Site Study Area and the proposed riser/diffuser and re-ballasting locations. Figure 13-8 shows the extent of PCB contamination within the Palos Verdes Shelf Superfund Site Study Area and the proposed riser/diffuser and re-ballasting locations.

Section 13.2.2.1, under Palos Verdes Shelf, Sediment Quality, is revised in the final EIR/EIS as follows:

> The PV Shelf includes 19,895 acres between the depths of 100 and 400 feet (30 and 120 meters), generally considered midshelf depths. Soft-bottom sediments are approximately 97 percent of the midshelf depths. The PV Shelf riser and diffuser area is within the boundaries of the EPA-designated Palos Verdes Shelf Superfund Site. The location of the DDT/PCB study area is depicted on Figure 13-4. <u>The extent of the DDT contamination within the PV</u>

> Shelf Superfund Site Study Area (EPA 2009a:27–28) and the proposed riser/diffuser and re-ballasting locations are shown on Figure 13-7. The extent of the PCB contamination within the PV Shelf Superfund Site Study Area (EPA 2009a:27–28) and the proposed riser/diffuser and re-ballasting locations are shown on Figure 13-8. See the discussion under Existing Ocean Outfalls for more details regarding the DDT/PCB on the PV Shelf, and refer to Appendix 13-A for levels of sediment contamination.

In addition, Section 25.13.1 is revised in the final EIR/EIS by adding the following reference:

> EPA. 2009a. Interim Record of Decision Palos Verdes Shelf Operable Unit 5 of Montrose Chemical Corporation Superfund Site. San Francisco, CA. Prepared by U.S. EPA, Region IX. 27–28 p.

Section 13.2.2.1, under Existing Ocean Outfalls, Location and Geography, is revised in the final EIR/EIS as follows:

> The existing ocean outfalls extend from the existing manifold structure at Royal Palms Beach and terminate at a depth of approximately 200 feet (60 meters) as described in Section 2.2.4.3. The ~~rehabilitation work~~ proposed re-ballasting would occur along the existing ocean outfalls at depths of 20 to 50 feet as shown on Figures 13-4, 13-7, and 13-8.

The seventh specific recommendation is that Chapter 2 of the final EIR/EIS should state that the Sanitation Districts entered into a consent decree in 1997 with the EPA to address DDT/PCB contamination on the Palos Verdes Shelf.

In response to this recommendation, Section 2.2.4.3, under JWPCP Effluent Management, last paragraph, is revised in the final EIR/EIS as follows:

> The pesticide, dichlorodiphenyltrichloroethane (DDT), was manufactured at the Montrose Chemical Corporation plant in Torrance, California, from 1947 through 1983. From ~~the late 1950s to the early 1970s~~1947 to1971, DDT was disposed of into Sanitation Districts' sewers and conveyed to the JWPCP. Local industries also discharged polychlorinated biphenyls (PCBs) into the Sanitation Districts' sewer system until PCBs were banned in 1976. The JWPCP had no means of removing or containing the DDT or PCBs, which were discharged along with the plant's effluent into the Pacific Ocean approximately 1.5 miles off White Point on the Palos Verdes Shelf. Since the 1970s, the contaminated sediment has been gradually buried by plant effluent and natural sediment, resulting in a layer of cleaner sediment on top of the contaminated sediment. In 1997, the Sanitation Districts entered into a consent decree with the EPA to address DDT/PCB contamination on the Palos Verdes Shelf. The EPA has conducted various studies and investigations to determine the extent of the contaminated area and to evaluate the appropriate remediation measures. In June 2009, the EPA released for public comment their proposed plan to address risks to human health and the environment posed by the contaminated sediment. The proposed plan presented the EPA's preferred alternative, as well as the other alternatives the EPA evaluated to address these risks. On September 30, 2009, the EPA signed an interim record of decision that selected an initial remedial action for the Palos Verdes Shelf of capping, monitored natural recovery, and institutional controls. The cleanup decision will be documented in a record of decision, supported by the EPA's remedial investigation/feasibility study.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-21

The comment states that the proposed rehabilitation work on the existing ocean outfalls would avoid potentially contaminated sediments and would not interfere with the EPA's proposed Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedy for the Palos Verdes Superfund Site, but nevertheless recommends the inclusion of specific BMPs in the final EIR/EIS and ROD to prevent interference with the EPA's proposed CERCLA remedy for the Palos Verdes Superfund Site and ensure minimum disturbance to sediments and marine habitats.

Table 3-13 of the draft EIR/EIS indicated that the proposed rehabilitation of the existing ocean outfalls under Alternative 4 (the recommended alternative) would begin in 2019 and last approximately 9 months. However, the construction schedules provided in Table 3-13 represent a worst-case scenario with respect to overlapping construction of project elements. This ensures a conservative approach for analyzing potential project impacts because it assumes project activities are occurring concurrently, thus resulting in greater air emissions and traffic impacts. In reality, a proposed project element, such as the rehabilitation of the existing ocean outfalls, that is independent of the other project elements with respect to construction sequencing could potentially be accelerated or delayed. Consequently, the proposed rehabilitation work may occur prior to the EPA's implementation of the proposed CERCLA remedy (i.e., placement of a sediment cap) by 2018. Regardless of when the rehabilitation work would actually occur, the Sanitation Districts will coordinate with the EPA during the design and construction phases as was done throughout the planning process. (Note that during the most recent coordination meeting, both parties agreed to enter into a memorandum of understanding that would preserve the EPA's need to implement the proposed CERCLA remedy and the Sanitation Districts' need to operate, maintain, and repair the existing ocean outfalls.)

The proposed CERCLA remedy was most recently presented in Section 9.4 of the EPA's Interim Record of Decision, Palos Verdes Shelf Operable Unit 5 of the Montrose Chemical Corporation Superfund Site (EPA 2009). As proposed, a 45-centimeter-thick cap consisting of clean sand/coarse silt would be placed over approximately 300 acres of the Palos Verdes Shelf where the highest surficial contaminant concentrations appear to be eroding. Figures 7 and 8 of the EPA's Interim Record of Decision (EPA 2009) indicate that the area of high surficial contaminant concentrations is near the terminus of the existing ocean outfalls, beginning at a depth of approximately 150 feet, with the highest concentrations at depths closer to 200 feet. Section 3.3.2.3 of the draft EIR/EIS described the proposed rehabilitation of the existing ocean outfalls. As described in Section 13.4.3.2 of the draft EIR/EIS, the primary sediment-disturbing activity would be placement of additional ballast rock along the existing outfalls at ocean depths ranging from approximately 20 to 50 feet. Given the distance between the proposed re-ballasting work and the EPA's proposed CERCLA remedy, potential impacts on the cap would not occur and mitigation is not required. However, if during final design it is determined that ballast rock is needed at depths greater than 50 feet, the Sanitation Districts would coordinate with the EPA to ensure that the work would not interfere with the proposed CERCLA remedy.

Sediment disturbing activities within the 20 to 50 feet isobaths would be minimal. Mechanical dredging or removal of large quantities of sediment would not be required. Joint repairs would require a localized and temporary removal of sediment and ballast rock. A team of divers would remove the ballast rock and hand-shovel approximately 2 cubic yards of sediment from each joint. It is estimated that approximately 10 to 40 joints would require repair, resulting in the hand removal of approximately 20 to 80 cubic yards of sediment. Therefore, relative to dredging projects, the rehabilitation work would entail removal of *de minimis* quantities of sediment. Re-ballasting activities would utilize a small derrick barge. A tube extending from the barge deck to the ocean floor would ensure that placement of ballast rock would not extend beyond the existing footprint. Furthermore, the Sanitation Districts would be required to

implement special conditions to minimize impacts on the marine environment per the Corps of Engineers' Department of Army permit issued pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-22

The comment supports the identification of Alternative 4 (the recommended alternative) as the least environmentally damaging practicable alternative (LEDPA) because it would not result in the dredging and sediment disposal impacts associated with new outfall construction for Alternatives 1 through 3. The comment also requests that the final EIR/EIS provide more detail to characterize impacts on kelp forests/beds.

The Sanitation Districts and the Corps concur that Alternative 4 (the recommended alternative) would minimize impacts on the marine environment. A draft 404(b)(1) analysis is currently being conducted to determine whether Alternative 4 is the LEDPA. A report summarizing the findings of the draft 404(b)(1) analysis is included as Appendix 24-A of the final EIR/EIS, and the final determination of the LEDPA will be included in the ROD for the EIS.

Table 24-1 is revised in the final EIR/EIS to reletter footnote "a" to footnote "b".

Table 24-1 is revised in the final EIR/EIS to add a footnote "a" to the first row under United States Army Corps of Engineers and the following addition to the footnote section at the end of table:

> [a] The draft 404(b)(1) analysis is included as Appendix 24-A.

See Response to Comment A12-5 regarding potential impacts on kelp forests/beds.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-23

The comment requests that the final EIR/EIS describe the approximate number of joints requiring repair and provide an estimate of the volume of bottom sediment potentially disturbed for the rehabilitation of the existing ocean outfalls to better inform whether additional sampling and BMPs would be appropriate to prevent redistribution of contaminated sediment, control turbidity, and protect nearby marine organisms.

See Response to Comment A12-5.

Section 3.3.2.3, under Existing Ocean Outfalls, second paragraph, is revised in the final EIR/EIS to include the approximate number of joints requiring repair and an estimate of the volume of bottom sediment potentially disturbed for the rehabilitation of the existing ocean outfalls.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-24

The comment states that the draft EIR/EIS did not fully assess and quantify cumulative impacts associated with the project, requests that air quality cumulative impact analysis include additional constituents of concern, and makes additional specific recommendations.

Under both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), a cumulative impact analysis is required in an EIR/EIS. The CEQA Guidelines state that

> *an EIR shall discuss cumulative impacts of the project when the project's incremental effect is cumulatively* considerable…. The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness…. (CEQA 2007.)

The Council for Environmental Quality has issued guidance for analyzing cumulative impacts under NEPA, entitled Considering Cumulative Effects Under the National Environmental Policy Act (CEQ 1997). The guidance states that the focus of cumulative effects analysis should be on important cumulative issues in order to lead to better decisions by the lead agency. The primary goal of the cumulative effects analysis is to determine the magnitude and significance of the environmental consequences of the proposed action in context of the cumulative effects of other actions.

EPA's guidance for reviewing cumulative impacts in NEPA documents, entitled Consideration of Cumulative Impacts in EPA Review of NEPA Documents (EPA 1999), states that

> *…Federal agencies have the responsibility of determining how and the extent to which cumulative impacts are assessed in NEPA documents and documenting that effort….*

EPA's guidance also suggests that the information in the cumulative impact analysis should be commensurate with the impacts of the project. In the case of the Clearwater Program, the impacts of the project are primarily related to the construction period. Many of the other projects in the cumulative impact analysis would result in impacts of a much larger scale or for much longer periods of time. For instance, the Port of Los Angeles and Port of Long Beach projects cited in the comment involve generation of large amounts of truck traffic on a long-term basis.

The cumulative analysis for the Clearwater Program is included in Chapter 21 of the draft EIR/EIS. For each resource area, this analysis described the scope of analysis; the impacts of past, present, and foreseeable future projects; and, for each alternative, the activities for which no potentially significant cumulative impact would result as well as the activities for which potentially significant cumulative impacts would result. Therefore, the analysis focused on the important cumulative issues as allowed and recommended by CEQA, NEPA, and the EPA guidance, commensurate with the impacts of the project, which are primarily during the construction phase. In some cases (e.g., air quality), the chapter referenced the cumulative analyses provided in other chapters of the document.

The comment recommends that the final EIR/EIS update the list of projects analyzed in the cumulative impact analysis. This is not required by NEPA, and CEQA requires that the baseline for environmental analysis be the conditions at the time of the notice of preparation for the EIR. Therefore, there is no requirement to update the list of projects and redo the analysis based on a revised list. The comment also requests more detailed information about the 128 projects in the cumulative projects list, but this is not necessary. Each of the resource analyses in the cumulative impacts chapter of the draft EIR/EIS provides

the necessary information for the projects within the scope of analysis for that resource, and discussed that information in the context of the timing and severity of the Clearwater Program impacts.

The comment recommends that there be a quantification of cumulative emissions from the project and other nearby goods movement projects, including terminal expansion projects at the Ports of Los Angeles and Long Beach, nearby proposed intermodal facilities, and freeway expansion projects. The scope of the air quality analysis, as described in Section 21.2.2.1 of the draft EIR/EIS, was the entire SCAB; therefore, the analysis included not only the projects mentioned in this comment, but also many other projects in the basin. This requested analysis would use the "list" approach to air quality analysis rather than the "projection" approach. The projection approach is better suited for air quality because of the scale of the analysis area (the entire SCAB) and the fact that there is a program in place to predict (i.e., make a projection) of air quality impacts and address them on a cumulative basis. Therefore, the SCAB nonattainment status for some pollutant criteria was used as the basis for the cumulative impact analysis.

Because the SCAB is in nonattainment for ozone, PM_{10}, and $PM_{2.5}$, the cumulative analysis identified existing cumulative impacts for these pollutants. The project/program would contribute to these cumulative impacts if their emissions would exceed SCAQMD's daily emissions thresholds. Any of the "build" alternatives (Alternative 1 through 4) would result in exceedances of the SCAQMD thresholds for NO_X, a precursor for ozone. Therefore, the cumulative impact analysis of air quality found that any of the build alternatives would contribute to a cumulative air quality impact, though only during construction.

For PM_{10} and $PM_{2.5}$, the build alternatives would not result in exceedances of the thresholds, so they would not contribute to a significant cumulative impact. This information was provided in Chapter 5 of the draft EIR/EIS. To clarify that the project and program would not contribute to a significant cumulative impact for these criteria, the following bullet is added to Section 21.2.2.2 of the final EIR/EIS under Alternative 1 Through Alternative 4, Activities for Which No Potentially Significant Cumulative Impacts Would Result:

- Concurrent peak day emissions of PM_{10} and $PM_{2.5}$ (combined construction and operational impacts) would not exceed the SCAQMD daily emissions thresholds at any time, as described in Chapter 5.

The comment recommends that the final EIR/EIS discuss whether there are projects that, if all are constructed at the same time, would heavily burden specific communities (with regard to construction impacts). This analysis is not necessary because the SCAQMD thresholds identify when such an impact would occur (by exceeding the thresholds). As discussed above, for Alternatives 1 through 4, this impact would occur for NO_X during the construction period. As discussed in the draft EIR/EIS, this impact would be unavoidable because mitigation would not reduce the impact to below the thresholds. This impact would not affect one community more than another because the criteria pollutant, NO_X, affects the entire basin, as a precursor to ozone. It is not a localized impact.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-25

The comment requests that the final EIR/EIS and ROD include a commitment to provide the construction schedule and contact information of the noise disturbance coordinator to affected sensitive receptors.

In response to EPA's request, MM NOI-1b (same as MM NOI-4b) is revised in the final EIR/EIS as follows:

> MM NOI-1b. Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents ~~living~~ in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.

This revision also applies to MM NOI-4b and MM REC-1b. This revision applies to Alternatives 1 through 4 and elsewhere in the final EIR/EIS and final Executive Summary where MM NOI-1b, MM NOI-4b, and MM REC-1b occur.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A12-26

The comment recommends that the final EIR/EIS and ROD include commitments to install signage at each shaft site during construction warning of dangers at the construction site.

In accordance with standard practices of the Sanitation Districts, contractors would be held responsible for ensuring that access is controlled at all construction sites, including the shaft sites. Fencing and signage alone are not necessarily sufficient to ensure site security, and in fact could lead to an “attractive nuisance” issue by providing a temptation to trespassers. Depending on the location, appropriate measures may include signage, screening, surveillance cameras, security personnel, or other methods. Besides the requirements of the Sanitation Districts, the contractors’ insurance coverage would also require controlled access. Because of these requirements, impacts related to site security would be less than significant and no mitigation is required.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A13: U.S. Environmental Protection Agency, Region IX – Paul F. Amato, Wetlands Regulatory Officer

Commenter A13

Highter, Steve

From: Allen, Aaron O SPL <Aaron.O.Allen@usace.army.mil>
Sent: Tuesday, April 10, 2012 8:00 AM
To: Wong, Kenneth SPL; Highter, Steve
Subject: FW: SDLAC Clearwater PN, SPL-2008-0087-AOA (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

See USEPA comments below:

---Original Message---
From: Paul Amato [mailto:Amato.Paul@epamail.epa.gov]
Sent: Tuesday, April 10, 2012 7:35 AM
To: Allen, Aaron O SPL
Cc: Jason Brush; Allan Ota; Thomas Plenys
Subject: SDLAC Clearwater PN, SPL-2008-0087-AOA

Hi Aaron,

The following comments are provided for your consideration and are essentially a repeat of our comments on the DEIS for the subject project.

Alternative 4, identified as the preferred alternative in the Corps' February 13, 2012 Public Notice, would avoid and minimize the impacts to aquatic resources described for Alternatives 1-3, including impacts associated with dredging and sediment disposal and fill from new outfall construction. Because of the degree to which project impacts would be avoided and minimized, EPA supports the identification of Alternative 4 as the preferred alternative and preliminarily EPA considers Alternative 4 to be the least environmentally damaging practicable alternative (LEDPA) that will achieve the overall project purpose. A13-1

Though not mentioned in the PN, the DEIS states that in 2008, 150 acres of kelp were reported in the White Point area; however it is not clear whether the project would result in any direct or indirect impacts to this specific habitat. Kelp forest and kelp bed are highly productive aquatic habitats providing areas for spawning, foraging and refuge for several marine species. These habitats can also provide physical buffers that can attenuate wave energy, reducing damage to coastal environments. Potential project impacts to kelp beds and forest should be assessed and avoided if they have the potential to occur. A13-2

It is unclear to what extent sediment disturbance, during construction of the preferred alternative, could result in increased turbidity and exposure of contaminated sediments. Based on the project description for Alternative 4, some ballast rock would be temporarily removed from the outfall pipes to expose the joints so that couplings and concrete or epoxy can be installed. EPA assumes that the entire circumference of the pipe would need to be exposed around each joint to complete this operation. If so, there is potential to disturb bottom sediments at several locations along the three outfalls. While it is expected that turbidity will be localized and temporary, it would be helpful to provide an estimate of the volume of bottom sediments that could be disturbed, This additional information would better inform whether additional sediment sampling and BMPs are appropriate to prevent the redistribution of contaminated sediments, control turbidity, and protect aquatic organisms in proximity to the project. A13-3

Please feel free to contact me directly to discuss any of the above comments.

1

Paul

Paul F. Amato
Wetlands Regulatory Officer
Wetlands Office
U.S. EPA, Region 9
75 Hawthorne Street, WTR-8
San Francisco, CA 94105-3901
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Classification: UNCLASSIFIED
Caveats: NONE

2

Response to Comment A13-1

The comment supports the identification of Alternative 4 as the recommended alternative and preliminarily considers Alternative 4 to be the least environmentally damaging practicable alternative (LEDPA).

The Sanitation Districts of Los Angeles County and the U.S. Army Corps of Engineers concur that Alternative 4 (the recommended alternative) would minimize impacts on the aquatic environment. A draft 404(b)(1) analysis is currently being conducted to determine whether Alternative 4 is the LEDPA. A report summarizing the findings of the draft 404(b)(1) analysis is included as Appendix 24-A of the final EIR/EIS, and the final determination of the LEDPA will be included in the record of decision for the EIS.

Table 24-1 is revised in the final EIR/EIS to reletter footnote "a" to footnote "b".

Table 24-1 is revised in the final EIR/EIS to add a footnote "a" to the first row under United States Army Corps of Engineers and the following addition to the footnote section at the end of table:

[a] The draft 404(b)(1) analysis is included as Appendix 24-A.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A13-2

The comment requests that the project assess and avoid any potential impacts on kelp forests and kelp beds because of their importance as marine habitat and physical coastal buffer.

As described in Section 3.3.2.3 of the draft EIR/EIS, rehabilitation of the existing ocean outfalls would include re-ballasting and joint repairs. Rehabilitation of the existing ocean outfalls would not require mechanical dredging or removal of large quantities of sediment. A small derrick barge would be used to place the ballast rock around the outfalls and to support the joint repair work. The re-ballasting work would occur on the existing 72-, 90-, and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A tube extending from the barge deck to the ocean floor would ensure that placement of ballast rock would not extend beyond the existing footprint. Joint repairs would require the temporary removal of sediment and ballast rock to fully expose the joint being repaired. A team of divers would remove the ballast rock and hand-shovel approximately 2 cubic yards of sediment from each joint. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. Cathodic protection would also be restored or added where necessary. It is estimated that approximately 10 to 40 joints would require repair, resulting in the hand removal of approximately 20 to 80 cubic yards of sediment. Therefore, because no mechanical dredging would be associated with Alternative 4 (the recommended alternative), the rehabilitation work would entail removal of *de minimis* quantities of sediment.

The 150 acres of kelp noted in Section 13.2.2.1 of the draft EIR/EIS are not strictly located within the White Point area but are spread over approximately 5 miles of coastline. In the White Point area, kelp can be found on the 72-, 90-, and the 120-inch outfalls at water depths ranging from approximately 40 to 70 feet. Areas shoreward of 40-foot depths do not support kelp due to wave action, sea urchin grazing, and the absence of hard substrate. The proposed re-ballasting work would occur at water depths ranging between approximately 20 and 50 feet. Thus, there would be some overlap between the general work

area and the kelp habitat from approximately 40 feet to 50 feet. As a result, re-ballasting activities could impact kelp growing on the outfall pipes and the adjacent rock ballast. However, the impact would be minimized because the proposed method of placing the new ballast rock ensures that the work would be limited to the existing footprint of the outfalls (i.e., pipeline and adjacent rock ballast). The impact would also be temporary because kelp would be able to recolonize the rock ballast upon completion of construction. Furthermore, replacement of rock ballast would increase hard substrate and thus benefit benthic habitat. Overall, direct and indirect impacts on kelp forests associated with the rehabilitation work for Alternative 4 (the recommended alternative) would be minimal and temporary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A13-3

The comment requests that the final EIR/EIS provide an estimate of the volume of bottom sediment potentially disturbed for the rehabilitation of the existing ocean outfalls to better inform whether additional sampling and best management practices would be appropriate to prevent redistribution of contaminated sediment, control turbidity, and protect nearby marine organisms.

As described in Section 7.2.5.4 of the draft MFP, Section 3.3.2.3 of the draft EIR/EIS, and the draft Executive Summary, rehabilitation of the existing ocean outfalls would include re-ballasting and joint repairs. See Response to Comment A13-2 for discussion on outfall rehabilitation.

Section 3.3.2.3, under Existing Ocean Outfalls, second paragraph, is revised in the final EIR/EIS as follows:

> Alternatives 1 through 4 (Project) would include improvements to the existing ocean outfalls, such as joint repairs and re-ballasting. The re-ballasting work would occur on the existing 72-, 90- and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A small derrick barge would be used to place the ballast rock around the outfalls and support the joint repair work. Joint repairs would involve temporarily removing some of the existing ballast rock from around the outfall to fully expose the joint being repaired. A team of divers would repair an estimated 10 to 40 joints and hand-shovel approximately 2 cubic yards of sediment from each joint. Mechanical dredging would not be required. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. ~~c~~Cathodic protection would also be restored or added where necessary. The marine vessels required for this work are listed in Table 3-10. The majority of the construction work would be based on one 10-hour shift per day, 5 days per week. It is estimated that approximately eight to ten construction workers would be needed for the rehabilitation work. Joint repairs and transport of construction workers would require a work vessel and crew vessel operating one daily round-trip for approximately 1 month, which would most likely deploy from the Port of Los Angeles. All of the work including mobilization, construction, and demobilization would take approximately 9 months.

No other revisions to the draft EIR/EIS are required in response to this comment.

Commenter A14: California Department of Conservation, Division of Oil, Gas, and Geothermal Resources – Syndi Pompa, Associate Oil and Gas Engineer

Commenter A14

Highter, Steve

From: Pompa, Syndi <Syndi.Pompa@conservation.ca.gov>
Sent: Tuesday, April 10, 2012 3:59 PM
To: Highter, Steve
Subject: Clearwater Program SCH 2008101074

Mr. Highter,

I did some research on what we may have done in the past with this issue, and it looks like we commented during the NOP/NOI phase in October of 2008. I found our comment letter in Appendix 1-B.

What was said then, would be the same thing I would say now, so I'm not going to comment on this Draft EIR. A14-1

You are aware of our concerns.

Thank you for making available your draft EIR, for the Clearwater Program, to review.

Syndi Pompa
Associate Oil & Gas Engineer
DOGGR/Facilities
5816 Corporate Ave., Ste. 200
Cypress, CA 90630
714-816-6847 (office)
714-816-7822 (direct)

STATE OF CALIFORNIA, RESOURCES AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR

DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES

5816 Corporate Avenue • Suite 200 • CYPRESS, CALIFORNIA, 90630-4731

PHONE (714) 816-6847 • FAX (714) 816-6853 • WEBSITE conservation.ca.gov

October 17, 2008

Mr. Steven W. Highter, P.E.
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601

Subject: Notice of Preparation of an Environmental Impact Report for the Clearwater Program Master Facilities Plan

Dear Mr. Highter:

The Department of Conservation's (Department) Division of Oil, Gas, and Geothermal Resources (Division) has reviewed the above referenced project. The Division supervises the drilling, maintenance, and plugging and abandonment of oil, gas, and geothermal wells in California.

The proposed project is located within the administrative boundaries of the Torrance and Wilmington oil field. There are numerous active, idle, plugged and abandoned wells within or in proximity to the project boundaries. The wells are identified on Division maps 126, 128, W1-6 and in Division records. The Division recommends that all wells within or in close proximity to project boundaries be accurately plotted on future project maps.

Building over or in the proximity of idle or plugged and abandoned wells should be avoided if at all possible. If this is not possible, it may be necessary to plug or re-plug wells to current Division specifications. Also, the State Oil and Gas Supervisor is authorized to order the reabandonment of previously plugged and abandoned wells when construction over or in the proximity of wells could result in a hazard (Section 3208.1 of the Public Resources Code). If abandonment or reabandonment is necessary, the cost of operations is the responsibility of the owner of the property upon which the structure will be located. Finally, if construction over an abandoned well is unavoidable an adequate gas venting system should be placed over the well. A14-2

Furthermore, if any plugged and abandoned or unrecorded wells are damaged or uncovered during excavation or grading, remedial plugging operations may be required. If such damage or discovery occurs, the Division's district office must be contacted to obtain information on the requirements for and approval to perform remedial operations.

The Department of Conservation's mission is to balance today's needs with tomorrow's challenges and foster intelligent, sustainable, and efficient use of California's energy, land, and mineral resources.

OCT 21 2008 10:54 DOC #

Mr. Steven Highter, Supervising Engineer – Planning Section
October 17, 2008
Page 2

To ensure proper review of building projects, the Division has published an informational packet entitled, "Construction Project Site Review and Well Abandonment Procedure" that outlines the information a project developer must submit to the Division for review. Developers should contact the Division's Cypress district office for a copy of the site-review packet. The local planning department should verify that final building plans have undergone Division review prior to the start of construction. A14-2 cont

Thank you for the opportunity to comment on the Notice of Preparation. If you have questions on our comments, or require technical assistance or information, please call me at the Cypress district office: 5816 Corporate Avenue, Suite 200, Cypress, CA 90630-4731; phone (714) 816-6847.

Sincerely,

Paul Frost

Paul Frost

Associate Oil & Gas Engineer

Division of Oil, Gas and Geothermal Resources
District 1

cc: State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044

Linda Campion – Headquarters
Sacramento

Response to Comment A14-1

The comment states that the comments provided for the notice of preparation (NOP) still apply to the draft EIR/EIS. The commenter also included a copy of the letter submitted for the NOP.

See Response to Comment A14-2.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A14-2

The comment states that the project would be located within the administrative boundaries of the Torrance and Wilmington Oil Fields. The comment recommends that all wells within or in close proximity to project boundaries be accurately plotted on future project maps and that construction over or in proximity of an idle or plugged and abandoned well be avoided if possible. Information is also provided regarding proper review procedures for construction projects.

As discussed in Section 10.2.2.1 of the draft EIR/EIS, the Wilmington to San Pedro Shelf alignment and the Wilmington to Palos Verdes Shelf alignment would pass through the Wilmington Oil Field, which contains numerous active, idle, and abandoned oil wells; the Figueroa/Gaffey to Palos Verdes Shelf alignment would skirt the southwestern margin of the Wilmington Oil Field; and the Figueroa/Western to Royal Palms alignment would briefly skirt the southwestern margin of the Wilmington Oil Field and may include the southeastern margin of the Torrance Oil Field. It was also stated that relatively few active, idle, or abandoned oil wells were mapped in the vicinity of the Figueroa/Western to Royal Palms alignment, which is the recommended alternative (Alternative 4).

Section 10.3.2.9 of the draft EIR/EIS described the role of the California Division of Oil, Gas, and Geothermal Resources (DOGGR) and acknowledged that the project would be located within the administrative boundaries of the Torrance and Wilmington Oil Fields. Additionally, it was stated that the tunnel alignments presented in the document were located specifically to minimize interference with active and idle wells. In the unlikely event that an abandoned oil well is encountered at a shaft site or during tunnel boring, the text indicated that the well would be re-abandoned in accordance with the California Code of Regulations Title 14, Division 2, Chapters 2 through 4, and with the approval of the local DOGGR office. Furthermore, as a part of the final design, wells would be included on the contract drawings that are based on DOGGR maps.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A15: Northwest San Pedro Neighborhood Council – Diana Nave, President

Commenter A15

Northwest San Pedro Neighborhood Council

"Your Community Voice"

Diana Nave
President

John Mavar
Vice President

Craig Goldfarb
Treasurer

Cynthia Gonyea
Secretary

April 10, 2012

Steven W. Highter
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, CA 90601
shighter@lacsd.org

RE: DEIR for Proposed Clearwater Project

Please accept the attached comments from the Northwest San Pedro Neighborhood Council with regard to the DEIR for the proposed Clearwater Project. At our governing board meeting on April 9, the Northwest San Pedro Neighborhood Council unanimously passed the attached resolution opposing Alternative 4 and supporting Alternative 1. The primary concerns of the council members and the community with regard to Alternative 4 are the proximity to the White Point Landslide and to the earthquake fault, which in 1933 caused the closure of the White Point/Royal Palms thermal pools. The resolution goes on to enumerate steps that should be taken in the event that the Districts decide to move forward with Alternative 4. A15-1

Thank you for your consideration of these comments.

Diana Nave, President
Northwest San Pedro Neighborhood Council

Cc: Councilmember Joe Buscaino
Aaron Allen, USACE

638 S. Beacon Street Box 688 • San Pedro, CA 90731 • (310)-732-4522
www.nwsanpedro.org

Northwest San Pedro Neighborhood Council
Sanitation Districts of Los Angeles County
Clearwater Program

Whereas, The Sanitation Districts of Los Angeles County's (the District's) have prepared a Draft Environmental Impact Report (DEIR) for the Clearwater Program which includes a third effluent treated water line from its Carson Plant to discharge off the coast of San Pedro; and

Whereas, four tunnel alignment alternatives were studied as part of the DEIR with Alternative 4 being chosen as the preferred option primarily based on cost. Alternative 4 is the only alternative that utilizes the existing ocean outfall infrastructure instead of additional tunneling and construction beneath the sea floor through the use of vertical shaft at Royal Palms Beach.

Whereas, the Alternative 4 of the Clearwater project will be tunneled under streets in Northwest San Pedro primarily Gaffey Street, Capital Drive, Western Avenue, and Dodson Avenue. A15-2

Whereas, the Clearwater project's Alternative 4 shaft site at Royal Palms will be used to tie in the existing ocean outfall infrastructure with the new treated effluent pipeline and remove the tunnel boring machine. Soil from the tunneling will be removed at the Carson shaft site. Shaft construction at the Royal Palms site will last between 6–9 months with approximately 10 to 40 trucks (maximum) per day leaving the site with soil. The onsite interconnection work will take approximately 18 months and the shaft will become a permanent structure at Royal Palms following completion of the tunneling project.

Whereas, Alternative 4, as proposed, has the following potentially harmful impacts on the environment and Northwest San Pedro; A15-3

- Potential for the Royal Palms Shaft site to initiate a landslide or ground failure in the surrounding cliffs due to the shaft construction.
- Construction truck traffic and noise impacts to the residents of Northwest San Pedro related to the construction of the Royal Palms Shaft site. A15-4
- The potential for a catastrophic failure of all treated effluent tunnels, existing and the proposed tunnel from Alignment 4, due to the proximity of all tunnels to the seismic zones along the Western Avenue route. A15-5
- Degradation of the aesthetics of Royal Palm Beach due to the construction of the shaft site and continued use of the site after construction has been completed. A15-6

Whereas Alternative 1 would not have many of these negative impacts, A15-7

Therefore, the Northwest San Pedro Neighborhood Council opposes the recommendation for Alternative 4 and recommends Alternative 1; A15-8

However, should the District decide to proceed with Alternative 4, we provide the following mitigations and studies to be performed prior to, and during construction:

- The District's should perform a detailed geotechnical study of the Royal Palms shaft site to provide a detailed understanding of the slope stability in the area. Details from this geotechnical study should be used to make specific recommendations to mitigate potential slope instability that may be caused by the shaft construction. A15-9
- Should the Royal Palms Site be used the surrounding slopes should be instrumented and monitored in prior to, during, and after construction of the shaft site. A15-10
- Modify MM AQ-3a (on-road heavy-duty diesel trucks), MM AQ-3b (off-road diesel-powered equipment), to require use of best available control technology/latest emissions-reduction technology, as soon as Air Resources Board (ARB) certified if applicable, regardless of Year or Tier stated. A15-11
- Modify MM AQ-3d to require use of construction equipment and heavy-duty trucks that use alternative fuels as soon as the equipment/fuels are ARB Certified. A15-12
- Modify MM AQ-3e to define periods when routing equipment away from congested streets and/or sensitive receptors is not feasible or remove the qualification "as feasible." A15-13
- Modify MM NOI-1a (Noise) to require that all equipment used within 500 feet of residential areas be equipped with best available control technology specifically designed for noise reduction. A15-14
- Provide specific Truck Trips projections and daily truck trip quantities from the Royal Palm Shaft site. A15-15
- Develop an alternative that includes car pooling to reduce the Passenger Car Equivalent trips per day during shaft-site construction and manifold construction. A15-16

Adopted April 9, 2012

Response to Comment A15-1

The comment provides an introduction to the attached resolution by the Northwest San Pedro Neighborhood Council and expresses support for Alternative 1 rather than Alternative 4 (the recommended alternative).

See Responses to Comments A15-2 through A15-16.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-2

The comment states that four tunnel alignment alternatives were analyzed in the draft EIR/EIS for the Clearwater Program and that Alternative 4 was chosen as the recommended alternative based primarily on cost. The comment also describes the general tunnel alignment of Alternative 4 and the construction of the Royal Palms shaft site, including the proposed use of the shaft site, truck trips, and duration. The comment states that Alternative 1 would not have many of the negative impacts associated with the construction described for Alternative 4.

As shown in Table 6-26 of the draft Master Facilities Plan, which lists the screening parameters and weighting used in the analysis of the viable project alternatives, cost effectiveness was only weighted 20 percent, and five other parameters (i.e., environmental impacts, public input, operational considerations, constructability, and long-term uncertainty) were collectively weighted 80 percent. Furthermore, environmental impacts and long-term uncertainty were each weighted just as heavily as cost effectiveness. Therefore, Alternative 4 (the recommended alternative) was not the highest ranked feasible alternative based primarily on cost.

The draft EIR/EIS provided a co-equal level of analysis for each of the four project alternatives, as well as the No-Project Alternative and No-Federal-Action Alternative. The draft Executive Summary contained a comprehensive table listing all of the significant environmental impacts and associated mitigation measures for each of the four project alternatives. Chapter 22 of the draft EIR/EIS provided a comparison of alternatives, which was summarized in Tables 22-1 and 22-2. Alternative 4 (the recommended alternative) would avoid marine environment impacts associated with constructing a new riser/diffuser and would minimize truck trips and air emissions due to its shorter tunnel length. Conversely, Alternative 1 would result in greater impacts on the marine environment due to new riser/diffuser construction and significantly more air emissions and truck trips due to its longer tunnel length. Based on the overall environmental analysis, it was concluded that Alternative 4 (the recommended alternative) is the environmentally preferred and superior alternative.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-3

The comment states that construction of Alternative 4 (the recommended alternative) has the potential to initiate a landslide or ground failure in the cliffs surrounding the Royal Palms shaft site.

As described in Chapter 8 of the draft EIR/EIS, implementation of Mitigation Measure (MM) GEO-1 at the Royal Palms shaft site, which involves performing a detailed geotechnical investigation and incorporating site-specific recommendations into the final design of the project, would reduce impacts to

less than significant. The detailed investigation would address issues such as landslide potential, slope stability, and ground failure.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-4

The comment states that Alternative 4 (the recommended alternative) would have harmful impacts on the environment and Northwest San Pedro due to construction truck traffic and noise impacts related to the construction at the Royal Palms shaft site.

As discussed in Chapter 18 of the draft EIR/EIS, traffic impacts associated with Alternative 4 (the recommended alternative) would be less than significant for both the construction and operational phases of the project.

As described in Chapter 14 of the draft EIR/EIS, construction noise from the Royal Palms shaft site would generally not produce a significant increase in overall ambient noise levels at residential areas north of Royal Palms Beach, particularly areas that do not have a direct line of sight into the shaft site. Occasionally, however, construction noise would exceed city noise standards at nearby residences and recreational uses, and impacts would be significant before mitigation. Implementation of MM NOI-1a and MM NOI-1b would reduce those impacts to less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-5

The comment states that there would be a potential for the catastrophic failure of both the existing and proposed tunnels for Alternative 4 (the recommended alternative), due to their proximity to the seismic zones along Western Avenue.

If a major earthquake on the Palos Verdes Fault were to occur that produced surface displacement, the existing tunnels could be severely damaged. All four alternatives analyzed in the draft EIR/EIS must cross the Palos Verdes Fault as shown on Figure 8-1 of the draft EIR/EIS. The risk of failure for the new tunnel does not increase or decrease based on the distance from the existing tunnels. Implementation of MM GEO-2, which involves performing site-specific fault hazard investigations to minimize the damage to the tunnel and structures, would reduce impacts to less than significant. The geotechnical recommendations will be incorporated into the final design and may include remediation measures, such as special lining systems inside the tunnel through the fault zone.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-6

The comment states that there would be a degradation of the aesthetics of Royal Palms Beach due to the construction of the shaft site and continued use of the site after construction has been completed.

As described in Chapter 4 of the draft EIR/EIS, under Impact AES-3, Shaft Site – Royal Palms, construction and operation at the Royal Palms shaft site would substantially degrade the existing visual character or quality of the site or its surroundings before mitigation. MM AES-3a would be implemented

to improve the aesthetic quality of the noise barrier during construction. This impact would remain significant after mitigation, but would be a temporary impact limited to the construction period.

The only visible element remaining after construction would be access hatches and vent stacks that are similar to the existing facilities. The hatches would be either flush with the ground or protrude slightly above the ground surface. MM AES-3b would be implemented to reduce the visibility of new structures during operation. This mitigation would reduce visual impacts associated with the access hatches and vent stacks at the Royal Palms shaft site after construction to less than significant. Therefore, there would not be a degradation of aesthetics at Royal Palms Beach due to the continued use of the site after construction has been completed.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-7

This introductory comment states that Alternative 1 would not have many of the negative impacts of Alternative 4 (the recommended alternative).

See Response to Comment A15-2.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-8

The comment expresses the Northwest San Pedro Neighborhood Council's opposition to Alternative 4 (the recommended alternative) and preference for Alternative 1.

The comment does not address the analysis in the draft EIR/EIS, so no response is necessary. The comment will be provided to the decision makers for their consideration.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-9

The comment recommends that a detailed geotechnical study on slope stability in the area be performed and specific recommendations based on the study be used to mitigate potential slope instability from construction.

Chapter 8 of the draft EIR/EIS included MM GEO-1 for the Royal Palms shaft site, which involves performing a detailed geotechnical investigation and incorporating site-specific recommendations into the final design of the project. The detailed investigation would address issues such as landslide potential, slope stability, and ground failure. Implementation of MM GEO-1 would reduce impacts to less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-10

The comment recommends that the slope at Royal Palms Beach be monitored to mitigate potential slope instability from construction.

Chapter 8 of the draft EIR/EIS included MM GEO-1 as discussed in Response to Comment A15-9. In addition, MM GEO-6b requires construction monitoring at shafts and along the onshore tunnel. With implementation of these mitigation measures, impacts would be reduced to less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-11

The comment requests that MM AQ-3a and MM AQ-3b require the use of best available control technology for off-road trucks and equipment as soon as California Air Resources Board (CARB) certification is obtained.

The Sanitation Districts of Los Angeles County (Sanitation Districts) are a regional public works agency that awards projects to contractors following an open bid process prescribed by state law. For construction projects, the equipment and vehicles are owned and operated by contractors. The contractor bears the responsibility for the regulatory compliance of its fleet and equipment, and makes the decisions regarding fleet mix and replacement schedule. The specifications and engineering drawings that are developed by the Sanitation Districts for the bid advertisement cannot be based on the presumption that certain technologies or equipment may be available at the start of construction.

Project construction is anticipated to start in 2015. Only equipment or engines that are known with certainty to be in use or available at the start of construction can be specified at this time. As indicated in Section 5.3.1.2 of the draft EIR/EIS, the manufacture of Tier 4 engines is being phased in from 2008 to 2015. Consequently, it is uncertain to what extent contractor fleets will include these diesel engines when construction begins. The mitigation measures proposed exceed CARB's fleet turnover compliance schedule.

Several mitigation measures would be incorporated into the project construction to lessen air quality and health risk impacts:

- MM AQ-2a (same as MM AQ-3a) specifies that heavy-duty diesel trucks used during construction with a gross vehicle weight greater than 26,000 pounds will have a 2007 model year engine or newer. Table 5-11 of the draft EIR/EIS showed that in 2015 only trucks with pre-1994 engines need to be replaced. MM AQ-2a goes beyond this regulatory requirement by requiring a cleaner engine. In response to multiple comments, the mitigation measure is revised in the final EIR/EIS as follows:

  > MM AQ-2a. All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than ~~26,000~~14,000 pounds will ~~include a particulate matter trap or~~have a 2007 model year engine or newer, or be equipped with a particulate matter trap.

  This revision also applies to MM AQ-3a and MM GHG-1a. This revision applies to Alternatives 1 through 4 and elsewhere in the final EIR/EIS and final Executive Summary where MM AQ-2a, MM AQ-3a, and MM GHG-1a occur.

- MM AQ-2b would require off-road diesel equipment used during construction to be equipped with Tier 3 engines and a diesel particulate matter trap. This would exceed EPA rules for in-use off-road diesel engines and CARB compliance schedule and nitrogen oxide (NO_X) targets for off-road diesel fleets (Table 5-12 of the draft EIR/EIS).

MM AQ-2b specifies the use of Tier 3 engines at a minimum regardless of fleet size and ahead of CARB's implementation schedule for in-use equipment. CARB's In-Use Off-Road Diesel Vehicle Regulation requires that fleets meet a Tier 3 equivalent average target at a date later than required for MM AQ-2b. The EPA Tier 3 NO_X standard is 3.5 grams per brake horsepower-hour (g/bhp-hr) NO_X + non-methane hydrocarbons (NMHC) NMHC (3.3 NO_X) for equipment less than 100 horsepower (hp) and 3.0 g/bhp-hr NO_X + NMHC (2.85 NO_X) for equipment greater than 100 hp. (CARB 2011a.)

- MM AQ-2g would require a Tier 4 engine for the tunnel locomotive, which would exceed regulatory requirements.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-12

The comment requests that MM AQ-3d be revised to require the use of construction equipment and heavy-duty trucks that use alternative fuels as soon as the equipment/fuels are CARB-certified.

In order to implement MM AQ-3d (and MM AQ-2d), commercially available construction equipment and heavy-duty trucks that use alternative fuels will need to be evaluated prior to finalizing the bid specifications. Reasonable efforts will be made to identify and evaluate CARB-certified technologies with a better emissions profile than the existing mitigation measures.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-13

The comment requests that MM AQ-3e define feasible periods when trucks would be routed away from congested streets and/or sensitive receptors or remove the qualification "as feasible."

A traffic plan that would specify truck hauling periods and routes will be developed and submitted to the city of Los Angeles for approval. The intent of the traffic plan is to minimize the number of trucks at any given time during the day, particularly during prime school hours.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-14

The comment requests modifying MM NOI-1a to require that all equipment within 500 feet of residential areas have BACT for noise reduction.

The utilization of sound barriers and the implementation of MM NOI-1a and MM NOI-1b at the Royal Palms shaft site would reduce noise impacts to less than significant. MM NOI-1a is a comprehensive mitigation measure that includes specific practices that would result in limiting noise at sensitive receptors to below local standards. Additionally, MM NOI-1b includes a complaint/response tracking program to ensure that reasonable measures are implemented to address any construction noise concerns from local residents during construction.

Because the mitigation measures included in the draft EIR/EIS would reduce impacts to less than significant, no additional mitigation is necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-15

The comment requests the truck trip projections from the Royal Palms shaft site.

The truck trip generation estimates for the Royal Palms shaft site construction were presented in Table 18-29 of the draft EIR/EIS. For the purposes of analyzing the potential traffic impacts of the project, a passenger-car-equivalent (PCE) factor of 2.0 was applied to each truck trip (i.e., the estimates shown in Table 18-29 of the draft EIR/EIS were double the number of estimated truck trips, as noted in the table's footnotes). It was estimated that a maximum of 40 truck round trips (80 total one-way trips) per day would occur during the approximately 9-month shaft construction period and subsequent 18-month manifold and tie-in construction period at the Royal Palms shaft site. Truck traffic would occur during one 10-hour shift, 5 days per week. For each hour of the workday, there would be an average of 4 inbound and 4 outbound truck trips, or about 1 truck trip every 7 to 8 minutes during the peak construction period.

As described in Chapter 18 of the draft EIR/EIS, truck trips were assumed to travel on Gaffey Street and Western Avenue to access Interstate (I-) 110, along the most direct route to the regional freeway system. The assumed specific route followed the Royal Palms Beach access road to Paseo Del Mar (northbound left turn), Western Avenue (westbound right turn), 9th Street (northbound right turn), and Gaffey Street (eastbound left turn) to reach I-110. The reverse of this route was assumed for inbound truck trips to the Royal Palms shaft site. The city of Los Angeles allows trucks to travel on city streets unless otherwise prohibited. The assumed haul route to the Royal Palms shaft site follows streets classified as Major Highways Class II, with the exception of a short distance on Paseo Del Mar, which is classified as a Secondary Highway.

As discussed in Section 18.3.4 of the draft EIR/EIS, the city of Los Angeles requires the preparation of traffic management plans for major construction projects that include designation of haul routes, among other elements, to ensure that any construction-related effects are minimized to the greatest extent possible.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A15-16

The comment requests carpooling as an alternative to reduce PCE trips during shaft site and manifold construction.

The construction worker trip generation estimates for the Royal Palms shaft site during construction were presented in Table 18-30 of the draft EIR/EIS. It was estimated that approximately 10 construction workers per day would be required during the 9-month Royal Palms shaft site and 18-month manifold construction, resulting in an estimated 20 daily worker trips (10 inbound and 10 outbound). The traffic impact analysis conservatively assumed that all inbound worker trips and all outbound worker trips would occur during the peak traffic hours, though it is unlikely that both inbound and outbound worker trips would coincide with the peak traffic hours due to the 10-hour shift. It was assumed that parking for these workers would occur on Sanitation Districts' property or in the adjacent parking lots at Royal Palms Beach and/or White Point Beach.

As discussed in Section 18.3.4 of the draft EIR/EIS, the city of Los Angeles requires the preparation of traffic management plans for major construction projects that include designation of areas for worker parking and work areas and allowable hours of construction activity, among other elements, to ensure that any construction-related effects are minimized to the greatest extent possible. If required by the city, some level of carpooling will be required of construction workers.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A16: South Coast Air Quality Management District – Ian MacMillan, Program Supervisor, Inter-Governmental Review, Planning, Rule Development and Area Sources

Commenter A16

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

E-MAILED: April 19, 2012

Mr. Steven W. Highter, Supervising Engineer, shighter@lacsd.org
Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, CA 90601

Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS) for the Proposed Clearwater Program Project

The South Coast Air Quality Management District (AQMD) appreciates the opportunity to comment on the above-mentioned document, including with an extended review period. The following comments are meant as guidance for the Lead Agency and should be incorporated into the Final CEQA/NEPA document.

In the project description, the lead agency proposes the Clearwater Program, a comprehensive plan to develop the Master Facilities Plan (MFP) for the Joint Outfall System (JOS). The JOS is a regional wastewater management system that meets the needs of communities and business in 73 cities and unincorporated areas of Los Angeles County. The proposed project would include excavation and soil export from the construction of a new approximately 7-mile tunnel that would convey treated wastewater from the Joint Water Pollution Control Plant (JWPCP) to the ocean outfalls. Construction would also include repair work on two existing effluent tunnels that are about six miles long and an expansion to the existing San Jose Water Reclamation Plant in Whittier to increase production of recycled water. The proposed project would also include planning to increase the number of anaerobic digesters at the JWPCP to process residual solids that can be converted into biosolids for future uses. Construction is estimated to begin in 2015 and last up to six years. Operations are expected to begin in 2021. A16-1

Based on the project description, the lead agency should contact AQMD engineering and compliance staff for input concerning activities that may require AQMD permits. Permit applications to construct/operate will be required for the modifications at five Water Reclamation Plants and the Joint Water Pollution Control Plant. In addition, the San Jose Creek Water Reclamation Plant expansion would require compliance with New Source Review and Rule 1401 - New Source Review of Toxic Air Contaminants requirements due to emission increases from the additional wastewater treatment capacity. Questions concerning permit requirements can be directed to engineering and compliance staff at (909) 396-2684.

Mr. Steven W. Highter, 2 April 19, 2012
Supervising Engineer

Please provide the AQMD with a written response to the comments contained herein prior to the adoption of the final environmental document. The AQMD staff is available to work with the Lead Agency to address these issues and any other air quality questions that may arise. Please contact Gordon Mize, Air Quality Specialist – CEQA Section, at (909) 396-3302, if you have any questions regarding these comments. A16-2

Sincerely,

Ian MacMillan
Program Supervisor, Inter-Governmental Review
Planning, Rule Development & Area Sources

IM:CT:GM

SBC120230-01
Control Number

Response to Comment A16-1

The comment provides guidance on contacting the South Coast Air Quality Management District (SCAQMD) to obtain necessary permits.

The Sanitation Districts of Los Angeles County (Sanitation Districts) and the U.S. Army Corps of Engineers are aware of the permitting requirements and will coordinate with SCAQMD during the permitting process.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A16-2

The comment requests that responses to SCAQMD's comments be forwarded to the agency in advance of adoption of the final environmental document.

As required by the California Environmental Quality Act, all commenting agencies are provided with responses to their comments at least 10 days prior to certification of the EIR. SCAQMD will also be notified with regard to the approval of the final EIS.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A17: City of South Gate – Emilio M. Murga, Assistant City Engineer

Commenter A17

Highter, Steve

From: Emilio M. Murga <emmurga@sogate.org>
Sent: Tuesday, April 24, 2012 12:04 PM
To: Highter, Steve
Cc: Mohammad Mostahkami
Subject: City of South Gate Comments, Clearwater Program Draft Environmental Report

Mr. Steven W. Highter,
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County

This email is is response to the Public Notice of Availability, Clearwater Program Draft Environmental Impact Report.

We regret to have missed the deadline of April 10, 2012, but nevertheless we reviewed the Draft Environmental Impact Report.

A17-1

We request that recycle water lines be extended through the City of South Gate arterial and collector streets, to serve the various parks, shopping centers with substantial landscaped areas and industrial areas throughout the City.

Thank you for your consideration.

Please call me if you have any questions.

Sincerely,

Emilio M. Murga
Assistant City Engineer
City of South Gate
Office: 323 563-9582
Cell: 323 595-9129

Information from ESET NOD32 Antivirus, version of virus signature database 7083 (20120424)

The message was checked by ESET NOD32 Antivirus.

http://www.eset.com

Response to Comment A17-1

The comment requests that recycled water lines be extended through the city of South Gate to serve various municipal purposes.

The Sanitation Districts of Los Angeles County (Sanitation Districts) recognize that recycled water is an essential regional resource, which is why one of the four primary objectives of the Clearwater Program is to "provide support for emerging recycled water reuse…opportunities." As described in Chapter 1 of the draft Master Facilities Plan, the Sanitation Districts have pioneered water reclamation and reuse in Southern California, beginning with the completion of the Whittier Narrows Water Reclamation Plant in 1962. The Sanitation Districts now own and operate 10 water reclamation plants (WRPs) that produce approximately 165 million gallons per day of high-quality recycled water. Approximately half of the recycled water is reused at over 640 sites throughout Los Angeles County. Eight of these WRPs, located in the Joint Outfall System (JOS), intercept and treat the more reclaimable wastewater flow that would instead be treated at the Joint Water Pollution Control Plant and discharged to the ocean. The tertiary-treated effluent produced at the JOS WRPs essentially meets drinking water standards and is used for groundwater replenishment (i.e., indirect potable reuse) and other important uses, including industrial, commercial, and recreational applications; habitat maintenance; and agricultural and landscape irrigation.

As stated in Chapter 11 of the draft EIR/EIS, the Sanitation Districts' Clearwater Program is consistent with the State Water Resources Control Board Recycled Water Policy to provide recycled water to purveyors in the region. This policy mandates significantly increasing the use of recycled water in California and replacing potable water with recycled water as much as possible by 2030. These mandates are achieved through a collaborative partnership among multiple entities, including the Sanitation Districts and water purveyors (e.g., city, water company, or water agency). State duplication of service laws requires the Sanitation Districts to work with local water purveyors to provide recycled water in areas with domestic service. The necessary distribution infrastructure (purple pipes) to convey recycled water to the end user would also need to be constructed or expanded by the water purveyor. The Sanitation Districts will continue to consider all feasible projects that would expand the use of recycled water in Los Angeles County to help the region meet the recycled water policy mandates.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A18: State of California, Governor's Office of Planning and Research – Scott Morgan, Director, State Clearinghouse

Commenter A18

STATE OF CALIFORNIA
GOVERNOR'S OFFICE of PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

May 25, 2012

Steven W. Highter
Los Angeles County
Sanitation Districts
1955 Workman Mill Road
Whittier, CA 90601

Subject: Clearwater Program Master Facilities Plan
SCH#: 2008101074

Dear Steven W. Highter:

The enclosed comment (s) on your Draft EIR was (were) received by the State Clearinghouse after the end of the state review period, which closed on March 26, 2012. We are forwarding these comments to you because they provide information or raise issues that should be addressed in your final environmental document.

The California Environmental Quality Act does not require Lead Agencies to respond to late comments. However, we encourage you to incorporate these additional comments into your final environmental document and to consider them prior to taking final action on the proposed project. A18-1

Please contact the State Clearinghouse at (916) 445-0613 if you have any questions concerning the environmental review process. If you have a question regarding the above-named project, please refer to the ten-digit State Clearinghouse number (2008101074) when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Enclosures
cc: Resources Agency

REC'D LACSD
MAY 31 '12 AM 9:59

DOC #

Highter S

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Response to Comment A18-1

The comment states that the State Clearinghouse encourages the consideration of the enclosed late comments in the final EIR/EIS, although consideration of late comments is not required under the California Environmental Quality Act (CEQA). A copy of a comment letter from the State Water Resources Control Board (SWRCB) was also provided.

The comment periods for the draft EIR and draft EIS were 60 and 57 days, respectively, which exceeded the 45-day requirements for both CEQA and the National Environmental Policy Act. In addition, the Sanitation Districts of Los Angeles County and the U.S. Army Corps of Engineers have given consideration to all late comments received within a reasonable timeframe that would not delay preparation of the final EIR/EIS.

The attached letter from the SWRCB is included in these Responses to Comments as Commenter A19. Therefore, the attached letter is not included in this response.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter A19: State Water Resources Control Board – Melessia Downham, Environmental Scientist

Commenter A19

Water Boards

State Water Resources Control Board

MAY 23 2012

Mr. John Kilgore
Los Angeles County Sanitation District
1955 Workman Mill Road
P.O. Box 4998
Whittier, CA 90607

Dear Mr. Kilgore:

CLEARWATER PROGRAM DRAFT ENVIRONMENTAL IMPACT REPORT AND ENVIRONMENTAL IMPACT STATEMENT (EIR/EIS) FOR THE LOS ANGELES COUNTY SANITATION DISTRICT (DISTRICT) AND THE UNITED STATES ARMY CORPS OF ENGINEERS (USACE); JOINT OUTFALL SYSTEM IMPROVEMENTS (PROJECT); LOS ANGELES COUNTY (COUNTY); STATE CLEARINGHOUSE NO. 2008101074

We understand the District is pursuing Clean Water State Revolving Fund (CWSRF) financing for this Project. As a funding agency and a State agency with jurisdiction by law to preserve, enhance, and restore the quality of California's water resources, the State Water Resources Control Board (State Water Board) is providing the following information on the EIR/EIS for the Project. The District is the lead agency under the California Environmental Quality Act (CEQA) and the USACE is the lead National Environmental Policy Act (NEPA) and jointly prepared an EIR/EIS.

Please provide us with the following documents applicable to the proposed Project following the District and the USACE CEQA and NEPA processes: (1) one copy of the draft and final EIR/EIS, (2) the District's resolution certifying the EIR/EIS and making CEQA findings, (3) all comments received during the review period and the District's and USACE's response to those comments, (4) the adopted Mitigation Monitoring and Reporting Program (MMRP), (5) the Notice of Determination filed with the Los Angeles County Clerk and the Governor's Office of Planning and Research, State Clearinghouse, and (6) the USACE Record of Decision. In addition, we would appreciate notices of any hearings or meetings held regarding environmental review of any projects to be funded by the State Water Board. A19-1

The State Water Board, Division of Financial Assistance, is responsible for administering the CWSRF Program. The primary purpose for the CWSRF Program is to implement the Clean Water Act and various state laws by providing financial assistance for wastewater treatment facilities necessary to prevent water pollution, recycle water, correct nonpoint source and storm drainage pollution problems, and provide for estuary enhancement, and thereby protect and promote health, safety and welfare of the inhabitants of the state. The CWSRF Program provides low-interest funding equal to one-half the most recent State General Obligation Bond Rates with a 20-year term. Applications are accepted and processed continuously. Please refer to the State Water Board's CWSRF website at www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/index.shtml. A19-2

RECEIVED DOC

MAY 29 '12 AM 10:21

2

The CWSRF Program is partially funded by the United States Environmental Protection Agency and requires additional "CEQA-Plus" environmental documentation and review. Four enclosures are included that further explain the CWSRF Program environmental review process and the additional federal requirements. The State Water Board is required to consult directly with agencies responsible for implementing federal environmental laws and regulations. Any environmental issues raised by federal agencies or their representatives will need to be resolved prior to State Water Board approval of a CWSRF financing commitment for the proposed Project. For further information on the CWSRF Program, please contact Mr Ahmad Kashkoli, at (916) 341-5855.

It is important to note that prior to a CWSRF financing commitment, projects are subject to provisions of the Federal Endangered Species Act (ESA), and must obtain Section 7 clearance from the United States Department of the Interior, Fish and Wildlife Service (USFWS), and/or the United States Department of Commerce National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) for any potential effects to special status species. Please be advised that the State Water Board will consult with USFWS, and/or NMFS regarding all federal special status species the Project has the potential to impact if the Project is to be funded under the CWSRF Program. The District will need to identify whether the Project will involve any direct effects from construction activities or indirect effects, such as growth inducement, that may affect federally listed threatened, endangered, or candidate species that are known, or have a potential to occur on-site, in the surrounding areas, or in the service area, and to identify applicable conservation measures to reduce such effects. A10.3

In addition, CWSRF projects must comply with federal laws pertaining to cultural resources, specifically Section 106 of the National Historic Preservation Act. The State Water Board has responsibility for ensuring compliance with Section 106 and the State Water Board's Cultural Resources Officer (CRO) must consult directly with the California State Historic Preservation Officer (SHPO). SHPO consultation is initiated when sufficient information is provided by the CWSRF applicant. If the City decides to pursue CWSRF financing, please retain a consultant that meets the Secretary of the Interior's Professional Qualifications Standards (www.cr.nps.gov/local-law/arch_stnds_9.htm) to prepare a Section 106 compliance report.

Note that the District will need to identify the Area of potential Effects (APE), including construction and staging areas and the depth of any excavation. The APE is three-dimensional and includes all areas that may be affected by the Project. The APE includes the surface area and extends below ground to the depth of any Project excavations. The records search request should be made for an area larger than the APE. The appropriate area varies for different projects but should be drawn large enough to provide information on what types of sites may exist in the vicinity.

Please contact the CRO, Ms. Cookie Hirn, at (916) 341-5690, to find out more about the requirements, and to initiate the Section 106 process.

3

Other federal requirements pertinent to the Project under the CWSRF Program include the following:

A. Compliance with the federal Clean Air Act: (a) Provide air quality studies that may have been done for the Project; and (b) if the Project is in a nonattainment area or attainment area subject to a maintenance plan; (i) provide a summary of the estimated emissions (in tons per year) that are expected from both the construction and operation of the Project for each federal criteria pollutant in a nonattainment or maintenance area, and indicate if the nonattainment designation is moderate, serious, or severe (if applicable); (ii) if emissions are above the federal de minimis levels, but the Project is sized to meet only the needs of current population projections that are used in the approved State Implementation Plan for air quality, quantitatively indicate how the proposed capacity increase was calculated using population projections.

B. Compliance with the Coastal Zone Management Act: Identify whether the Project is within a coastal zone and the status of any coordination with the California Coastal Commission.

C. Protection of Wetlands: Identify any portion of the proposed Project area that should be evaluated for wetlands or United States waters delineation by the USACE, or require a permit from the USACE, and identify the status of coordination with the USACE.

D. Compliance with the Farmland Protection Policy Act: Identify whether the Project will result in the conversion of farmland. State the status of farmland (Prime, Unique, or Local and Statewide Importance) in the Project area and determine if this area is under a Williamson Act Contract.

E. Compliance with the Migratory Bird Treaty Act: List any birds protected under this act that may be impacted by the Project and identify conservation measures to minimize impacts.

F. Compliance with the Flood Plain Management Act: Identify whether or not the Project is in a Flood Management Zone and include a copy of the Federal Emergency Management Agency flood zone maps for the area.

G. Compliance with the Wild and Scenic Rivers Act: Identify whether or not any Wild and Scenic Rivers would be potentially impacted by the Project and include conservation measures to minimize such impacts.

A19-3 cont.

4

Following are specific comments on the District's and USACE's Draft EIR/EIS:

1. Please include copies of consultation correspondences and approval documents (Clean Water Act [CWA] Section 401 Water Quality Certification and CWA Section 404 USACE Permit, California Department of Fish and Game 1600 Lake and Streambed Alteration Agreement, Coastal Development Permit, Biological Opinion's, Section 106 with the SHPO), and any associated Biological Assessments and supporting documents, along with your CWSRF Application.

2. For environmental impacts that will result in a significant and unavoidable impact after mitigation, please prepare a Statement of Overriding Consideration (SOC) with substantial evidence that explains why the District is willing to accept each significant effect. In addition, please include the SOC in the record of Project approval and identify it in the Notice of Determination to be filed upon Project approval [CEQA Guidelines Section 15093 (b) and (c)].

A19-4

Thank you for the opportunity to review the District's and USACE's Draft EIR/EIS. If you have any questions or concerns, please feel free to contact me at (916) 341-5542, or by email at mdownham@waterboards.ca.gov, or contact Ahmad Kashkoli by email at akashkoli@waterboards.ca.gov

Sincerely,

Melessia Downham
Environmental Scientist

cc: State Clearing House
(Re: SCH# 2008101074)
P.O. Box 3044
Sacramento, CA 95812-3044

Enclosures (4)

1. SRF & CEQA-Plus
2. Quick Reference Guide to CEQA Requirements for State Revolving Fund Loans
3. Instructions and Guidance for "Environmental Compliance Information"
4. Basic Criteria for Cultural Resources Reports

Response to Comment A19-1

The comment requests that copies of the draft and final EIR/EIS, the certifying resolution by the Sanitation Districts of Los Angeles County's (Sanitation Districts') Board, all comments received during review of the draft EIR/EIS and responses to comments, the mitigation monitoring and reporting program, the notice of determination (NOD), and the record of decision be provided to the State Water Resources Control Board (SWRCB). The comment also requests notification of any hearings.

The SWRCB was provided with copies of the draft EIR/EIS. Copies of the other requested documents as well as notices of all hearings will be provided to the SWRCB when available.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A19-2

The comment provides general information about the Clean Water State Revolving Fund (SRF) Program.

The Sanitation Districts appreciate the information provided by the SWRCB regarding the SRF Program. However, because the information is general and does not specifically address the draft EIR/EIS, no response is necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A19-3

The comment explains the SWRCB's requirements for California Environmental Quality Act (CEQA) documentation and reviews, consultations, and federal environmental laws and requirements prior to providing funding through the SRF Program.

The Clearwater Program Draft Master Facilities Plan (MFP) and draft EIR/EIS were prepared in conformance with the SWRCB's policy for implementing the SRF Program for construction of wastewater management facilities. Appendix A of the draft MFP reviewed the project report requirements by the SWRCB. In this appendix, applicable sections of the draft MFP were referenced, and in some cases, supplemental information was provided as necessary to address SRF Program requirements. Section 1.7.7 of the draft EIR/EIS stated that the document would be used by the SWRCB to ensure compliance with SRF Program loan requirements. Specific federal environmental regulations as required under CEQA-Plus have been addressed in the draft EIR/EIS through compliance with NEPA. The U.S. Army Corps of Engineers (Corps) is the federal lead agency because the Corps has direct permitting authority over the Clearwater Program.

Table 1-3 of the draft EIR/EIS identified major applicable statutes, plans, policies, and other regulatory requirements that the Clearwater Program addressed in the document including the Clean Water Act, federal Endangered Species Act, National Historic Preservation Act, Clean Air Act, and Coastal Zone Management Act. The Migratory Bird Treaty Act was addressed in Section 6.3.1.7 of the draft EIR/EIS. Table 1-3 is revised in the final EIR/EIS to include the following rows after the federal Endangered Species Act entry:

Federal Migratory Bird Treaty Act, 1918

Makes it unlawful at any time, by any means or in any manner, to take (pursue, hunt, take, capture, possess, transport, sell, or kill) or attempt to take migratory birds. The U.S. Fish and Wildlife Service is the lead agency for migratory birds.

The Farmland Protection Policy Act, Williamson Act, and Wild and Scenic River Act are not applicable to the Clearwater Program. The Farmland Protection Policy Act is not applicable because, as described in the Preliminary Screening Analysis (Appendix 1-A of the draft EIR/EIS), none of the program or project elements would be located within or around farmland, nor would they convert any farmland or forestry resources to non-agricultural uses. The Williamson Act is not applicable because, as described in the Preliminary Screening Analysis, all of the program or project elements would be located on lands that are not zoned for agriculture or identified by the Williamson Act. The Wild and Scenic River Act is not applicable because no wild or scenic rivers, as defined by the Wild and Scenic River Act, are located within the study area for the Clearwater Program.

As described in the Preliminary Screening Analysis (Appendix 1-A of the draft EIR/EIS), the only project elements located within 100-year or 500-year floodplains, as shown on the applicable flood insurance rate maps, would be the shaft sites. The only permanent structures located at these sites would be belowground access facilities that would not increase base flood elevation levels. Therefore, the national flood insurance program floodplain management building requirements, as stipulated by the Flood Plain Management Act, would not be applicable.

Federal agency consultation meetings were conducted prior to the release of the draft EIR/EIS, as shown in Table 2 of Appendix 1-B of the draft EIR/EIS. Additionally, as described in Section 7.3.1.1 of the draft EIR/EIS, the Corps is the federal lead agency responsible for identifying eligibility for listing in the National Register of Historic Places under Section 106 of the National Historic Preservation Act as a part of its permitting process, and for determining and documenting an area of potential effects. As described in Chapter 7 of the draft EIR/EIS, study areas were established for the project elements. Resources were identified and/or mitigation included for the study areas. For program elements where study areas cannot be identified at this time, supplemental environmental analysis at the project level will be required, including identifying study areas for cultural resources.

The Sanitation Districts and the Corps will provide the additional coordination and documentation to comply with the requirements of the SWRCB during the final EIR/EIS process and after certification of the EIR and approval of the EIS.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment A19-4

The comment lists documents that will be required as part of the SRF Program application. The comment also requests that a statement of overriding consideration be prepared per the CEQA Guidelines.

The Sanitation Districts will provide the requested documents as part of the SRF Program application. In addition, the Sanitation Districts' Board will approve a statement of overriding considerations that includes substantial evidence as to why the Sanitation Districts are willing to accept each significant effect, include the statement of overriding considerations in the record of project approval, and identify the statement of overriding considerations in the NOD.

No revisions to the draft EIR/EIS are required in response to this comment.

28.3 Public

Commenter P1: ConocoPhillips Pipe Line Company – Leo Martinez, Utility Coordinator

Commenter P1

ConocoPhillips
Pipe Line Company

ConocoPhillips Pipe Line Company
Leo Martinez
Utility Coordinator
Corporate Real Estate PTRRC*
*Property Tax, Real Estate, Right of Way and Claims
1232 Park Street, Suite 300
Paso Robles, CA 93446
805-226-2658 - Office
805-239-4410 – Fax

February 27, 2012

Charles E. Boehmke
Sanitation District of Los Angeles
1955 Workman Mill Road
Whittier, CA 90601-1400

RE: Clearwater Program Master Facilities Plan

Mr. Boehmke

This letter is to inform the County of Los Angeles Sanitation District that ConocoPhillips has numerous active pipelines along the proposed route which can be impacted. Please send me more detailed drawings, including elevation data of the tunnels when the information is available so that we can evaluate their potential impact on or near our facilities. P1-1

Sincerely,

Leo Martinez
Property Tax, Real Estate, Right of Way and Claims

Steve Highter

REC'D LACSD
FEB 29 '12 AM 9:56

DOC # 2174498 Boehmke C (Fac Plan)

Response to Comment P1-1

The comment requests coordination with ConocoPhillips prior to construction in the vicinity of their pipelines.

As standard practice, the Sanitation Districts of Los Angeles County will coordinate with utility providers, including ConocoPhillips, during final design and construction. Detailed drawings with elevation data will be provided at that time.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P2: Janet Gunter – Resident

Commenter P2

Highter, Steve

From: Janet Gunter <arriane5@aol.com>
Sent: Wednesday, March 07, 2012 10:05 PM
To: Haug, David; Highter, Steve
Subject: Fwd: LA County Clean Water/LA County Sewer Plan attached LA City Rupture Zone Doc...SAFTYELT from Janet Gunter
Attachments: saftyelt.pdf; rupturezonecityla-1.jpg

Sorry...screwed up your addresses initially!!! Typical!

-----Original Message-----
From: Janet Gunter <arriane5@aol.com>
To: dhaug <dhaug@lasd.org>; shighter <shighter@lasd.org>; connie <connie@rutter.us>; MrEnvirlaw <MrEnvirlaw@sbcglobal.net>
Cc: rkim <rkim@lacbos.org>; chateau4us <chateau4us@att.net>
Sent: Wed, Mar 7, 2012 10:00 pm
Subject: LA County Clean Water/LA County Sewer Plan attached LA City Rupture Zone Doc...SAFTYELT from Janet Gunter

Hi David and Steven-

Here is the LA City Doc that I spoke of. I got the date wrong...but, it is still relevant. Also, of particular note for you...would be the Alquist Priolo Act of 1970 and its references to building on an earthquake fault. Although, it references in specific a "home"....the issue is the ***act of building or constructing*** in an area as vulnerable as this one on No. Gaffey St. The Rancho LPG facility should have never been allowed to be located at the Gaffey St. site. We are actually 40 years into the 50-100 year predictability of a significant seismic event upon the Palos Verdes fault that was proclaimed in the EIR for the LPG facility in 1973. P2-1

My experience with consultants is that they often miss important details and prove to be deficient. Our lawsuit on the China Shipping EIR proved this point. The added complication of this hazardous gas facility should also be considered when thinking about the future of your identified major sewer line plan. Our homeowners grave concern on the Rancho LPG facility is the fact that the 25 million gallons of butane gas (the largest stored volume in a populated area in the nation) burns at around 1800 degrees centigrade....and will cause radiant heat strong enough to ignite any other combustibles for miles. The "domino effect" of all of the multiple fuel resources in the region would cause an inferno never before witnessed. The infrastructure of just about everything will be decimated. While, the option of moving this sewer line through the port might be more costly...and "cutting edge" as far as distance.... personally, it appears to be the most sensible approach. And, the long term concept makes more sense as well. If the County is going to spend this kind of money on this system...don't you believe that it would behoove the County to consider this kind of potential loss in its analysis? However drastic the cost may appear at this point in pursuing the Port option instead of option #4 (Gaffey St)....it is critical to think about the longevity of the pipeline and the protection of the investment. In 25 years...this cost will not be considered dramatic. particularly if you have a system that is still viable, intact and healthy. That is why further consideration of this issue is so important. P2-2 P2-3

I know that this issue is a difficult one...but, one that has to be addressed. Although there are no easy answers....there is a crucial need to employ the "best" decision that will yield the most logical and responsible decision. There also remains the potential to condemn the Rancho facility for safety reasons and continue on with your project as planned without the fear of this explosive opportunity looming on the horizon. Makes sense, no? I hope that your team and the County will investigate this concern vigorously.

Best:
Janet G

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Response to Comment P2-1

The comment questions whether the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) is applicable to the project and expresses concerns about the potential impact of a seismic event on the Rancho Liquefied Petroleum Gas (LPG) facility.

The Alquist-Priolo Act was discussed in Section 8.3.2.1 of the draft EIR/EIS. The law requires that some structures, such as private dwellings, be set back at least 50 feet from the mapped trace of an active fault. The Alquist-Priolo Act is applicable to projects that propose structures intended for human occupancy. The Clearwater Program does not propose structures intended for human occupancy.

Each of the four alternatives analyzed in the draft EIR/EIS must cross the Palos Verdes Fault as shown on Figure 8-1 of the draft EIR/EIS. Implementation of Mitigation Measure GEO-2, which involves performing site-specific fault hazard investigations to minimize damage to the tunnel and structures, would reduce impacts to less than significant. The geotechnical recommendations will be incorporated into the final design and may include remediation measures, such as special lining systems inside the tunnel through the fault zone.

The Rancho LPG facility is located over 4,000 feet south of where the Palos Verdes Fault crosses the recommended tunnel alignment (Alternative 4). The two large Rancho LPG butane storage tanks are approximately 600 feet east of the tunnel alignment. At this location, the tunnel invert would be approximately 100 feet below the ground surface. Therefore, given the tunnel location and depth, construction and operation of the tunnel would not have an impact on the Rancho LPG facility, and an upset at the Rancho LPG facility would not have an impact on the tunnel.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P2-2

The comment expresses concerns about the potential for an explosion at the Rancho LPG facility to result in damage to the proposed Clearwater Program infrastructure, and states that this is a reason that the outfall tunnel should be located at the Port of Los Angeles.

See Response to Comment P2-1.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P2-3

The comment states that, despite the initial cost savings of constructing Alternative 4 (the recommended alternative) instead of an alternative aligned through the Port of Los Angeles, a port alignment would be more cost effective in the long term if an explosion at the Rancho LPG facility were to result in the loss of the tunnel being proposed under Alternative 4.

As discussed in Response to Comment P2-1, the tunnel proposed under Alternative 4 would be located approximately 600 feet away from the two large Rancho LPG butane storage tanks and at a depth of approximately 100 feet below the ground surface. Therefore, Alternative 4 (the recommended alternative) would not be impacted by an explosion at the Rancho LPG facility, and it would not be more cost-effective in the long term to construct an alignment through the Port of Los Angeles.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P3: JoAnn Wysocki – Resident (March 7, 2012, Public Hearing at the Carson Community Center, Carson, California)

Commenter P3

MS. WYSOCKI: JoAnn Wysocki, 1006 King Avenue in Wilmington in the Rancho Palos Verde area. As they spent $82,000 on the Environmental Impact Report for the dog park, I'm kind of curious as to how much this cost to put together all these very nice Environmental Impact Report on good quality paper. P3-1

I was curious in all of the draft reports why Sepulveda Boulevard was mentioned so much because it is so far south -- or so far north of this project, and it just kind of -- I just wondered if it was because of the truck traffic. P3-2

The statistics in Figure 18-3 and Appendix B of the EIR used 2009 for the vehicular traffic, and I suppose that it is probably the latest stat that they can use typically, though it says 2010. But I do point out the area particularly at Anaheim and Figueroa at the on ramp to the 110 freeway, there is a great deal of traffic that comes down from the hill, and that traffic causes the backup to the hill through a small residential area. So there were no traffic statistics for that area, and I'd like to see there should be some. P3-3

The west shaft site is what we call the Margate property which is in Figure 6-7, and there is mention of a possible pumping plant 7.2.5.1, pages 7, 5. I need a P3-4

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1 little bit more information on the proposal for the
2 pumping plant.
3 The shaft construction -- how many shifts? For
4 instance, is it 10-hour shifts, five days a week? But P3-4 cont.
5 24 hours in a day, you should have two shifts. And how
6 many workers do you have and where will the workers'
7 cars go? If it's the west shaft, there is quite a bit
8 of property. There are 18 acres for parking.
9 It's the age old problem with environmental
10 staff reports on traffic. Does a truck taking dirt away
11 from a construction site go once and come back; is that P3-5
12 two trips? Or is that one truck going around twice? It
13 needs a little bit of clarification.
14 As to the hundred-foot crane, how are we going P3-6
15 to get it to the shaft site? Do they drive it down the
16 street, or are you going to dismantle it?
17 And Volume II of the Appendices to the Joint
18 Water Pollution Control Plant. They don't know where it
19 is. They've got it placed way south of Pacific Coast P3-7
20 Highway and even Anaheim, but that's after page 8-A-9,
21 Attachment B and Attachment C-1.
22 They mention Gaffey Street at the 110 freeway,
23 Gaffey Street and Ninth Street, Gaffey Street and Paseo P3-8
24 Del Mar, Western at Paseo Del Mar, and Western and Ninth
25 Street. They put them in the city of Wilmington.

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1 They're all in San Pedro the last time I looked. And
2 Wilmington is not a city; it is a community in a city. P3-8 cont.
3 This is the intersection.
4 Turning movements on Figure 6-10 and 6-11,
5 pages 6-9 should be defined r-u-d-e-r-a-l vegetation, P3-9
6 just for the record.
7 In Volume I Appendices for all the projects.
8 The print is entirely too small, and the pages are not P3-10
9 numbered.
10 In 18-5, Volume II, of the second draft, it
11 said Figueroa Street and Harris Bridge is no longer in
12 existence. Yes, it is. I just took it to San Pedro
13 today, so that needs to be corrected. P3-11
14 Streets to Harris Bridges, Figures 8-2, is
15 still open. And C Street to John S. Gibson -- those two
16 streets run parallel to each other. So I think they
17 should take a look at Tables 18-3 and 18-8.
18 They keep talking about the Pasha Terminal, but
19 they never put it on the map. 19.4.3.1, Figure 21-1, P3-12
20 page 19-33 and page 20-28. Please put it on the map, so
21 people know where it is.
22 And shame on the Los Angeles Police
23 Department -- I'm going to say this tomorrow at
24 San Pedro -- 16-9. They did not respond to the primary P3-13
25 response time for Angels Gate and Royal Palms. Perhaps

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they will respond again. P3-13 cont.

I presume this project will be put out to bid. You know the question of local hiring is going to come up. This is not going to be a great job maker, but the secondary jobs will be increased. P3-14

Are we taking into account cost overruns? How about street sweeping and street watering? That's 5-27, and telephone contact so that people can complain if something goes wrong, or they have questions. P3-15 P3-16

And of course, removing graffiti in a timely manner, page 15-38. P3-17

People always make criticisms about the continued use of reclaimed water. This is a good opportunity for them to give some examples that no one has thought of. P3-18

When will the Final Environmental Impact Report be released? It said 2012, but 2012 -- is that Christmastime or September? When will it be released? Thank you. P3-19

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Response to Comment P3-1

The comment asks about the printing costs associated with the draft EIR/EIS.

The cost for printing and mailing one copy of the draft EIR/EIS, including the Executive Summary, Master Facilities Plan (MFP), and appendices, was approximately $690. The Sanitation Districts of Los Angeles County (Sanitation Districts) and U.S. Army Corps of Engineers (Corps) are cognizant of the need to conserve paper and minimize document reproduction costs. Thus, only a limited number of hard copies were produced and the use of electronic distribution was maximized. Electronic documents were made available on the Sanitation Districts' website and the Clearwater Program website, as well as distributed via compact disc. However, to facilitate public access to the materials, hard copies were made available for review at three public libraries in the project area and at the main headquarters of the Sanitation Districts. In addition, a few hard copies were produced as for the record copies for the various agencies involved. Overall, 18 full sets of documents were produced.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-2

The comment requests clarification as to why Sepulveda Boulevard is mentioned various times in the draft EIR/EIS even though it is located away from the alternative sites.

As described in Section 18.2.2 of the draft EIR/EIS, Sepulveda Boulevard transects the northern portion of the Joint Water Pollution Control Plant (JWPCP). Because each of the alternatives analyzed included improvements to the JWPCP and a shaft site at the JWPCP, Sepulveda Boulevard was referenced numerous times in the analysis.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-3

The comment suggests that the baseline traffic count data used in the traffic analysis was collected in 2009. The comment also requests that traffic analysis be conducted at Anaheim Street and Figueroa Street.

As discussed in Section 18.2.3 of the draft EIR/EIS, the traffic impact analysis was based on counts collected in late February and early March 2010 at all but three study intersections. The exceptions, located in Wilmington, used 2008 baseline count data for projecting future conditions in the vicinity of Figueroa Street and Harry Bridges Boulevard to provide consistency with the Final Environmental Impact Report for the Wilmington Waterfront Development Project, which was certified when the traffic analysis for the Clearwater Program was initiated. The year of the counts was correctly shown for the title of Figure 18-3, "Existing (2010) Peak Hour Traffic Volumes," and the base counts were provided in Appendix 18-A of the draft EIR/EIS.

The intersection of Figueroa Street and Anaheim Street is located over 1 mile south of the JWPCP. It was not selected for traffic impact analysis because it is not located on a major access route to the JWPCP or to any of the alternative shaft sites and thus would not be expected to be significantly affected by the activities associated with the Clearwater Program.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-4

The comment refers to the JWPCP West shaft site as the Margate property and requests additional information regarding a possible pumping plant, construction shifts, and employee parking.

Should the existing effluent pumping plant at the JWPCP become inadequate in the future, space within the JWPCP West shaft site has been allocated for the placement of a future pumping plant. The pumping plant – along with a ground-level cover over the shaft, a surge tower, vent pipes, and access covers – would require a total of approximately 0.5 acre.

Shaft construction would be based on a single 10-hour shift working 5 days a week. The number of workers on site would vary depending on what construction activity is occurring. The JWPCP West shaft site has sufficient space for employee parking even during peak construction activities.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-5

The comment requests clarification on how truck trips were counted in the draft EIR/EIS.

Round trips were counted as two trips, as explained in footnote (a) to Tables 18-12, 18-22, and 18-29 of the draft EIR/EIS, which presented construction truck trip generation estimates for each of the alternatives. In addition, as stated in Section 18.2.3 of the draft EIR/EIS, a passenger car equivalent factor of 2.0 was applied to construction trucks to account for the fact that their operating characteristics differ from those of automobiles.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-6

The comment requests information on how the 100-foot crane would be brought to the shaft site.

The 100-foot crane would be delivered in pieces and assembled on site.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-7

The comment states that the location of the JWPCP was not properly shown in Volume 2 of the appendices after Page 8-A-9 on Attachment B and Attachment C-1.

It appears that the comment is in reference to Appendix 13-E of the draft EIR/EIS, Joint Water Pollution Control Plant National Pollutant Discharge Elimination System Permit (2006). The JWPCP was incorrectly located on Attachment B, Location Map, which was after Page A-9. The JWPCP should be located between Sepulveda Boulevard and Pacific Coast Highway, not south of Pacific Coast Highway.

However, Attachment B was a copy of a portion of a waste discharge permit that was issued to the Sanitation Districts in 2006 by the California Regional Water Quality Control Board (RWQCB). Therefore, as an official RWQCB document, it cannot be revised for the final EIR/EIS. However, it should be noted that Appendix 13-F included the most recently issued Joint Water Pollution Control Plant

National Pollutant Discharge Elimination System Permit (2011) by the RWQCB. For the 2011 permit, Attachment B did correctly locate the JWPCP on the map.

Attachment C (Page C-1) was a flow schematic of the treatment system. Therefore, the comment is not relevant to Attachment C, Page C-1, of the draft EIR/EIS.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-8

The comment addresses the Existing (2010) Level of Service Worksheets found in Appendix 18-B of the draft EIR/EIS. The comment states that the city is incorrectly labeled on some of the worksheets.

These forms were used during analysis by the traffic consultant. Some of these forms include a field for the city in which the intersection is located. Although these intersections are actually within the jurisdiction of the city of Los Angeles, the traffic consultant used San Pedro or Wilmington to provide context for analysis purposes. This identification does not affect the accuracy of the analysis because the jurisdictional information is not relevant to the analysis.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-9

The comment asks for a definition of ruderal.

Ruderal vegetation refers to natural vegetation growing in areas that have been disturbed by humans (Merriam-Webster 2012).

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-10

The comment states that the print was too small in the appendices and that some pages lacked page numbering.

The appendices provided information to supplement the draft EIR/EIS. In some cases the print size needed to be small to allow printing on a standard 8½-by-11-inch sheet of paper. Some documents (e.g., model outputs) do not have page numbering.

As noted in Response to Comment P3-1, the Clearwater Program documents are electronically accessible on the Sanitation Districts' website, the Clearwater Program website, and compact disc. In an electronic format, readers have the ability to zoom in on any page if necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-11

The comment states that the intersection of Figueroa Street and Harry Bridges Boulevard exists and requests that the intersection be shown on Figure 18-5. The comment also requests that Table 18-3 and Figure 18-8 (not Table 18-8) be revised because C Street and John S. Gibson Street are parallel streets.

The title of Figure 18-5 of the draft EIR/EIS was "Cumulative Base (2017) Peak Hour Traffic Volumes." This figure appropriately reflected that the intersection of Harry Bridges Boulevard and Figueroa Street would no longer exist once the planned improvements to the Interstate-110 and C Street interchange were completed. The lane configuration shown on Figure 18-2 of the draft EIR/EIS also appropriately reflected the planned improvements at that location.

The comment is correct regarding C Street and Harry Bridges Boulevard being parallel; however, as shown on Figure 18-2 of the draft EIR/EIS, the southernmost segment of Figueroa Street lies between C Street and the intersection of John S. Gibson Street and Harry Bridges Boulevard. Table 18-3 and Figure 18-8 of the draft EIR/EIS are correct as shown.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-12

The comment requests that Pasha Terminal be labeled on the figures in the draft EIR/EIS.

There were in-text references to Pasha Terminal in Chapters 3, 12, 14, 16, 18, and 19 of the draft EIR/EIS. There were no in-text references to Pasha Terminal in Section 19.4.3.1, Pages 19-33 or 20-28. On Figure 21-1, none of the detailed areas within the Port of Los Angeles were labeled directly on the map due its scale. However, in the legend of Figure 21-1, under the Port of Los Angeles Projects, cumulative Project No. 17 (which was listed as "Berths 171-181, Pasha Marine Terminal Improvements Project") was properly located in Pasha Terminal. Pasha Terminal was shown in greater detail on Figures 12-8 and 12-9. To better locate Pasha Terminal, the following figures are revised for the final EIR/EIS: Figures 18-1, 18-4, 18-7, 18-10, and 19-2.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-13

The comment expresses disappointment that the Los Angeles Police Department did not provide information about the response times for the Angels Gate and Royal Palms shaft sites.

The information was requested, but neither the Sanitation Districts nor the Corps has the means to compel the police department to provide the information.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-14

The comment requests information on how the project would be bid and what employment opportunities it would create.

The project would be competitively bid. While tunneling is a highly specialized profession that would likely attract national and/or international construction firms, there could be a temporary increase in local hiring to accommodate the less specialized construction activities and secondary jobs that would be created.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-15

The comment requests information on how cost overruns would be managed.

A contingency consistent with industry standards for a project of this size was applied to the cost estimate to account for possible overruns.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-16

The comment requests information on how dust would be controlled and a contact number for people to express concerns during construction.

It is the Sanitation Districts' standard practice to require contractors have a motor sweeper on the job site at all times to keep paved areas acceptably clean wherever construction is occurring. In addition, implementation of South Coast Air Quality Management District Rule 403 would reduce dust emanating from the job site because watering would occur at least three times a day. As part of the community outreach, a contact number would be established to provide people with a means to express their concerns during construction.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-17

The comment requests information on how graffiti would be removed in a timely manner.

It is the Sanitation Districts' standard practice to require contractors to remove graffiti within 24 hours of notification. Implementation of Mitigation Measure (MM) AES-1 (same as MM AES-3a), as described in the draft EIR/EIS, would ensure maintenance of the aesthetic treatments by removing graffiti in a timely manner.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-18

The comment suggests that the Clearwater Program publicize new and innovative uses of recycled water.

As described in Appendix 1-B of the draft EIR/EIS, since 2006, the Sanitation Districts conducted over 500 public outreach meetings with public officials; civic and community groups; businesses; environmental organizations; news media; and various local, state, and federal agencies. This effort facilitated a productive exchange of information and ideas between the Sanitation Districts and stakeholders regarding all components of the Clearwater Program, including reuse opportunities for recycled water.

The Sanitation Districts and Corps recognize that recycled water is an essential regional resource, which is why one of the four primary objectives of the Clearwater Program is to "provide support for emerging recycled water reuse…opportunities." As described in Chapter 1 of the draft MFP, the Sanitation Districts have pioneered water reclamation and reuse in Southern California, beginning with the completion of the Whittier Narrows Water Reclamation Plant in 1962. The Sanitation Districts now own

and operate 10 water reclamation plants that produce approximately 165 million gallons per day of high-quality recycled water. Approximately half of the recycled water is reused at over 640 sites throughout Los Angeles County for groundwater replenishment; industrial, commercial, and recreational applications; habitat maintenance; and agricultural and landscape irrigation. This message has been and will continue to be an important component of the Sanitation Districts' public outreach and education efforts.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P3-19

The comment requests clarification on the actual release date of the final EIR/EIS.

It is currently anticipated that the final EIR/EIS will be released during the final months of 2012. However, circumstances beyond the Sanitation Districts and Corps' control could delay this release date.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P4: Kiran Magiawala – Resident (March 7, 2012, Public Hearing at the Carson Community Center, Carson, California)

Commenter P-4

DR. MAGIAWALA: Thank you. My name is Kiran Magiawala. And I will spell it out for the benefit of everyone. My first name is K-i-r-a-n, and the last name, Magiawala, M-a-g-i-a-w-a-l-a.

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1 And I am a resident of Hawthorne, California,
2 and I wanted to share with the Clearwater Program some
3 information which I have come to know on the general
4 subject of what to do with the soil that is removed from
5 tunneling and where to put it and what might be the
6 beneficial uses of those soils that are removed.
7 I came to Los Angeles Department of Power and
8 Water [sic] -- is conducting long-term study on this
9 subject of sedimentation removal for their dams, and
10 they have been studying various ways of collecting those
11 particular soils, transporting them, and disposing them
12 at various locations on various pits as well as the
13 landfills as well as, if possible, replenishing the P4-1
14 beaches, and some processes for them to make. And I had
15 requested the Clearwater Program to look over what they
16 have been doing and understand that it would be better
17 if they could use some portion of that information for
18 the future use as to what to do with the soil removed
19 from the tunneling which we are going to be conducting.
20 I do not know the exact number on the cubic
21 feet of the soil, but just for the sake of an
22 approximate number, the number which they are talking
23 about for the removal of the sediment or soil is
24 approximately 16 million cubic feet. And for us it
25 could be alternating between maybe 8 or 10 million cubic

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1 feet or less of soil. Thank you. P4-1 cont.

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Response to Comment P4-1

The comment suggests that the Sanitation Districts of Los Angeles County (Sanitation Districts) consider beneficial uses for the excess excavated material generated during tunneling construction.

Section 3.3.2.1 of the draft EIR/EIS stated that material excavated by the tunnel boring machine (TBM) would be removed for disposal or possibly beneficial use. There are two types of TBMs that are commonly used for tunnel construction: earth-pressure balance (EPB) and slurry type. The EPB method removes material as-is, while the slurry method blends the material with water and bentonite, which may preclude certain types of disposal or beneficial use. In either case, the Sanitation Districts will strive to find the best means of managing the excavated material.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P5: Janet Gunter – Member, San Pedro Peninsula Homeowners United (March 7, 2012, Public Hearing at the Carson Community Center, Carson, California)

Commenter P5

MS. GUNTER: Good evening. My name is Janet Gunter, and I'm with the San Pedro Peninsula Homeowners United. I'm a member of that group, and I think you'll probably hear more from them tomorrow evening.

Our biggest concern in the community of San Pedro as of late has to do with the liquid petroleum gas facility that is right at the juncture extremely close to this project on site four. That represents the single largest storage facility of its type in the nation in a populated area which happens to be sitting on top of Palos Verdes fault, very much like this project that is being planned. The area is also USGS identified liquefaction landslide area. It is also a methane zone. P5-1

Our concern has to do with any effects this project may have on the operation and the vulnerabilities that already exist at that site. Also, you know, obviously the geological conditions in the area are suspect, to say the least. The area they said is fine, and I read in the newspaper lately that the geotechnical analysis says that the area which is a hundred feet away is fine, but if you look at -- it P5-2

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1 doesn't take a genius to look at that coastline there to
2 see that you have a sunken city area which fell in the
3 ocean back, I believe, in the late '30s. You have --
4 that's on the east of it. And on the west of it on the P5-2 cont.
5 same coastline and within two and a half miles probably,
6 which is Portuguese Bend which is also landslide, and in
7 the area in between, which is right near this outfall,
8 was the area that just fell. It's in the national news.
9 So you know, as a homeowner, as a person in the
10 community, I understand that we need to do something
11 with this project. I always thought, even though it was
12 going to cost more money, that the less offensive route
13 or least offensive route would be to take it through the
14 facility -- through the harbor, underground, not
15 disturbing -- yeah, you've got marine life there, and P5-3
16 you've also got soil disruption there as well. But it
17 seems to me that then the most sensible route to take --
18 I'm sure the port doesn't like that idea. And again, I
19 am sort of a cynic because I've been fighting the Port
20 of L.A. on many of these issues which are the same
21 issues that we're facing now -- the vulnerability with
22 our reaction to the port's introduction of a facility at
23 marine terminal back in the '70s.
24 So you know, they've built some things in the
25 community over time that are offensive, and we feel

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like, at least speaking for myself and not the group, it appears that here is a straightforward route that might cost more money and might interrupt to some degree some of the potential operations there but would serve the best of -- the rest of us in a better fashion. P5-3 cont.

I am sure that the organization will have a presence tomorrow night at the meeting, and they'll probably submit written responses, and I may write and submit my written responses to you later. Thank you.

Response to Comment P5-1

The comment expresses concerns about the existing Rancho Liquefied Petroleum Gas (LPG) facility, its proximity to the Palos Verdes Fault, and the effects the proposed project may have on its operation.

Each of the four alternatives analyzed in the draft EIR/EIS must cross the Palos Verdes Fault as shown on Figure 8-1 of the draft EIR/EIS. Implementation of Mitigation Measure (MM) GEO-2, which involves performing site-specific fault hazard investigations to minimize damage to the tunnel and structures, would reduce impacts to less than significant. The geotechnical recommendations will be incorporated into the final design and may include remediation measures, such as special lining systems inside the tunnel through the fault zone.

The Rancho LPG facility is located over 4,000 feet south of where the Palos Verdes Fault crosses the recommended tunnel alignment (Alternative 4). The two large Rancho LPG butane storage tanks are approximately 600 feet east of the tunnel alignment. At this location, the tunnel invert would be approximately 100 feet below the ground surface. Therefore, given the tunnel location and depth, construction and operation of the tunnel would not have an impact on the Rancho LPG facility, and an upset at the Rancho LPG facility would not have an impact on the tunnel.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P5-2

The comment expresses concern about the potential for landslides to affect Alternative 4 (the recommended alternative).

The draft EIR/EIS discussed the potential for landslides at the Royal Palms shaft site (part of Alternative 4 [the recommended alternative]), in Section 8.4.6.2, Impact GEO-1, Shaft Site – Royal Palms. The draft EIR/EIS stated that the shaft would be constructed in Altimira Shale, which could contain weak layers, and that excavation could result in ground failure in the vicinity of the shaft. The draft EIR/EIS recognized this as a significant impact. Mitigation was included to reduce this impact to less than significant. Specifically, MM GEO-1 and MM GEO-6a require geotechnical investigation and site-specific recommendations for stabilization of slopes and shaft instability. The mitigation measures state that all recommendations be incorporated into the final design. In addition, MM GEO-6b requires construction monitoring at the shafts and along the onshore tunnel.

In addition, Appendix 8-A of the draft EIR/EIS included a letter report, prepared by Fugro West, that addressed the potential for Alternative 4 (the recommended alternative) to affect slope stability in the Royal Palms area. This report was prepared in response to the recent landslide activity on Paseo Del Mar near White Point State Beach. In summary, the report stated that the Monterey Formation throughout the peninsula can be folded and variable over short distances. Weak bentonitic layers contained within the formation have resulted in some of the landslides when the bedding plane is out of slope (i.e., slopes downhill towards the ocean). In the vicinity of Royal Palms Beach, the bedding planes are sloped in a favorable inclination, which was confirmed during the excavation of the Sanitation Districts of Los Angeles County's (Sanitation Districts') 8- and 12-foot tunnels in 1938 and 1957, respectively. The report concluded that impacts on the stability of the existing slopes in the vicinity of the Alternative 4 alignment resulting from tunnel construction would be unlikely. Furthermore, the reinforced concrete tunnel may improve slope stability. The study recommended that (1) additional geotechnical investigation be conducted during final design and (2) the slopes be instrumented and monitored in

advance of, and during, construction activities as a precautionary measure. Implementation of MM GEO-2, MM GEO-6a, and MM GEO-6b would fulfill these recommendations.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P5-3

The comment expresses a belief that an alternative through the Port of Los Angeles would be the least offensive route, even though it would cost more and would disturb marine life.

The draft EIR/EIS analyzed a reasonable range of alternatives that feasibly meet the project objectives and purpose and need. These final feasible alternatives were determined through the alternatives analysis process presented in Chapter 6 of the draft MFP and summarized in Chapter 3 of the draft EIR/EIS. As shown in Table 6-26 of the draft MFP, which lists the screening parameters and weighting used in the analysis of the viable project alternatives, several weighted screening parameters (i.e., cost effectiveness, environmental impacts, public input, operational considerations, constructability, and long-term uncertainty) were applied to score the alternatives. On the basis of its superior relative ranking, Alternative 4 was selected as the recommended alternative.

The draft EIR/EIS provided a co-equal level of analysis for each of the four project alternatives. The draft Executive Summary contained a comprehensive table, beginning on Page 34 that listed all of the significant environmental impacts and associated mitigation measures for each of the four project alternatives. Chapter 22 of the draft EIR/EIS provided a comparison of alternatives, which was summarized in Tables 22-1 and 22-2. Alternative 4 (the recommended alternative) would avoid marine environment impacts associated with constructing a new riser/diffuser and would minimize truck trips and air emissions due to its shorter tunnel length. Conversely, Alternative 1 would result in greater impacts on the marine environment due to new riser/diffuser construction and significantly more air emissions and truck trips due to its longer tunnel length. Based on the overall environmental analysis, it was concluded that Alternative 4 (the recommended alternative) is the environmentally preferred and superior alternative.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P6: Lonna Calhoun – Resident, (March 8, 2012, Public Hearing at the Crowne Plaza Los Angeles Harbor Hotel, San Pedro, California)

Commenter P6

The first person would be Lonna Calhoun.

MS. CALHOUN: Good evening. I'd like to start by saying that I'm representing myself as a resident but also as a emergency management consultant most recently for the last couple years for the city of Rancho Palos Verdes where I studied their hazardous analysis, assessed their risks, trained their staff, and the emergency operation centers and conducting emergency drills. P6-1

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1 So in that capacity I'm very familiar with the
2 landslide activity along our coastline, and that's my
3 primary concern. I do want to emphasize that also as an
4 emergency manager, I believe that the importance of
5 infrastructure improvement is really vital to the
6 survival of our community in the event that we do have
7 major impacts. So I'm a hundred percent supportive of
8 the project.
9 My concern is with the Alternative 4, and the
10 impact that it may have on our coastline here in
11 San Pedro, especially when we consider the recent
12 landslide on Paseo Del Mar. Now, I have studied P6-1 cont
13 extensively -- I kind of grunt at that a little bit --
14 Chapter 8 of your EIR that deals with each alternative
15 and the risks and how you would mitigate those risks.
16 And just quickly because I only have five
17 minutes, I want to point out a couple things that I
18 circled, and that one would be on page -- I believe
19 that's 8, Chapter 8-36, where we talk about the tunnel
20 alignment, Alternative Number 1, which is really not
21 along any identified landslide area.
22 Okay. As we move further into your Chapter 8
23 plan, on page 149, when you start talking about
24 Alternative 4, the Royal Palms shaft site is -- says
25 it's not in any mapped landslide area. However,

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1 construction of the shaft would be in the Altamira Shale
2 that could contain weak layers below the water table.
3 And excavation at this instability of the construction
4 risk that could result in ground failure in the vicinity
5 near the shaft -- at the shaft.
6 Moving forward to page 156, we are talking
7 about Alternative 4 could expose people or structures to
8 potential substantially adverse effect including risk of
9 life and involving the substrata consisting of material
10 that is subject to liquefaction or other secondary
11 seismic hazards. Okay. That's a concern.
12 Moving forward into page 158, it says
13 construction of the shaft at Royal Palms could result in PG-1 cont
14 unstable earth conditions in the vicinity of the shaft.
15 For example, weak layers in the Altamira Shale could be
16 exposed in construction cuts, slope instability could
17 create slope movement if the nearby natural slopes were
18 affected, and unstable earth conditions could occur over
19 the broader area than the shaft. Once the shaft is
20 constructed and during tunnel drilling, there would be
21 minimum risk of instability.
22 I wanted to point out a couple other documents
23 that I'm going to leave with you. One of them is the
24 Natural Hazard Mitigation Plan for the City of Rancho
25 Palos Verdes that deals a lot with the prehistoric

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landslide area in Portuguese Bend. And one of the things that you'll notice here is that when that landslide began was in 1956, and it says the Portuguese Bend landslide began its moderate movement in August 1956 when displacement was noted at northeast margin during construction of the Crenshaw Boulevard extension from Crest Road to the Palos Verdes Drive, moving gradually extending downslope so that the entire eastern edge of the slide mass was moving within six weeks. By summer of 1957, the entire slide mass was sliding towards the sea. Cost, $14.6 million and $2,000.

P6-1 cont

I also wanted to point out that according to their plan, the majority of the peninsula is underlaid by shale and siltstone units of the Monterey formation. These innovative units have planes of weakness that are conducive to landsliding and slope instability. This is all along our coastline. And I think that this is our big concern.

I also want to leave you with a document that I worked on with the City of L.A. Emergency Management Department, and we produced it for the community in 2009, and in this document we researched the sunken city, just on the other side of the proposed construction and the coastal erosion, and we identified

as one of the risks to start a landslide is dredging. And this is based on historical documentation.

So my concern is really based on the fact that I believe this community has suffered a true loss, a loss that they're still grieving, and that is the loss of the landslide that we just had in Paseo Del Mar. And I believe that our coastline is unstable, and any type of project like this that could even possibly increase our risk is not acceptable to us, especially when there are other alternatives. Maybe they would cost a little bit more, but if you consider the fact of what the cost would be if a landslide is generated because of this activity, it would be substantially far more. F6.1 cont.

I can leave these documents with you for your review. Thank you.

Response to Comment P6-1

The comment is concerned that Alternative 4 (the recommended alternative) has the potential to initiate a landslide or ground failure in the surrounding cliffs due to shaft construction at the Royal Palms shaft site.

The draft EIR/EIS discussed the potential for landslides at the Royal Palms shaft site (part of Alternative 4 [the recommended alternative]), in Section 8.4.6.2, Impact GEO-1, Shaft Site – Royal Palms. The draft EIR/EIS stated that the shaft would be constructed in Altimira Shale, which could contain weak layers, and that excavation could result in ground failure in the vicinity of the shaft. The draft EIR/EIS recognized this as a significant impact. Mitigation was included to reduce this impact to less than significant. Specifically, Mitigation Measure (MM) GEO-1 and MM GEO-6a require geotechnical investigation and site-specific recommendations for stabilization of slopes and shaft instability. The mitigation measures state that all recommendations be incorporated into the final design. In addition, MM GEO-6b requires construction monitoring at the shafts and along the onshore tunnel.

In addition, Appendix 8-A of the draft EIR/EIS included a letter report, prepared by Fugro West, that addressed the potential for Alternative 4 (the recommended alternative) to affect slope stability in the Royal Palms area. This report was prepared in response to the recent landslide activity on Paseo Del Mar near White Point State Beach. In summary, the report stated that the Monterey Formation throughout the peninsula can be folded and variable over short distances. Weak bentonitic layers contained within the formation have resulted in some of the landslides when the bedding plane is out of slope (i.e., slopes downhill towards the ocean). In the vicinity of Royal Palms Beach, the bedding planes are sloped in a favorable inclination, which was confirmed during the excavation of the Sanitation Districts of Los Angeles County's (Sanitation Districts') 8- and 12-foot tunnels in 1938 and 1957, respectively. The report concluded that impacts on the stability of the existing slopes in the vicinity of the Alternative 4 alignment resulting from tunnel construction would be unlikely. Furthermore, the reinforced concrete tunnel may improve slope stability. The study recommended that (1) additional geotechnical investigation be conducted during final design and (2) the slopes be instrumented and monitored in advance of, and during, construction activities as a precautionary measure. Implementation of MM GEO-2, MM GEO-6a, and MM GEO-6b would fulfill these recommendations.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P7: John Winkler – Resident (March 8, 2012, Public Hearing at the Crowne Plaza Los Angeles Harbor Hotel, San Pedro, California)

Commenter P7

MR. WINKLER: Good evening. My name is John Winkler. I wanted to -- I'm a resident and past steering committee volunteer for Peck Park.

And one of the things I wanted to bring to your attention is the backfill that would be available for projects here in San Pedro, and there are two projects currently right now would be the recent landslide at

P7-1

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Paseo Del Mar and down near the palms, and that dirt could be used for backfill. And the other project is the Dunn Canyon off of Summerland in San Pedro, and it's a project that would enhance the lower part of Peck Park if they filled in the canyon that partially. And this would help provide a need for recreation that is not being addressed at the present time, and this is referring to Hernandez Ranch. Thank you very much. P7-1 cont.

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Response to Comment P7-1

The comment suggests that the Sanitation Districts of Los Angeles County (Sanitation Districts) may be able to use excess material as backfill for San Pedro area construction projects.

Section 3.3.2.1 of draft EIR/EIS stated that material excavated by the tunnel boring machine (TBM) would be removed for disposal or possibly beneficial use. There are two types of TBMs that are commonly used for tunnel construction: earth-pressure balance (EPB) and slurry type. The EPB method removes material as-is, while the slurry method blends the material with water and bentonite, which may preclude certain types of disposal or beneficial use. In either case, the Sanitation Districts will strive to find the best means of managing the excavated material.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P8: JoAnn Wysocki – Resident (March 8, 2012, Public Hearing at the Crowne Plaza Los Angeles Harbor Hotel, San Pedro, California)

Commenter P8

MS. WYSOCKI: JoAnn Wysocki, 1006 King Avenue in Wilmington.

Volume II of the draft, Chapter 18B, the level of services at the intersection turning movement, it says Gaffey Street to the 110 ramp, Gaffey Street to the Ninth Street, Gaffey Street to Paseo Del Mar, Western to Paseo Del Mar, and Western to Ninth Street. It says they're all in the city of Wilmington. The last time I looked, they were in San Pedro. Also Wilmington is not a city; it's a community just as San Pedro is. P8-1

In the Volume II, Chapter 16-9, there was no response from the Los Angeles Police Department, and they gave the John S. Gibson Boulevard address on primary response time to Angel Gate or Royal Palms. Shame on the L.A.P.D., especially if it's down here. P8-2

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L.A.P.D. should respond in the Final EIR. P8-2 cont.

This Environmental Impact Report should be an opportunity for anyone who has new suggestions for new uses of reclaimed water, and we need additional P8-3

information in the Final Environmental Impact Report on the project being put out to bid -- cost overruns, street sweeping, and removal of graffiti in a timely manner. This is from Volume II, Chapter 15-38. P8-4

And I have a question that I would like to have answered tonight: Would the Final Environmental Impact Report be sent to the San Pedro Regional, the Carson Regional, and the Wilmington Branch libraries? Thank you. P8-5

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Response to Comment P8-1

The comment addresses the Existing (2010) Level of Service Worksheets found in Appendix 18-B of the draft EIR/EIS. The comment states that the city is incorrectly labeled on some of the worksheets.

These forms were used during analysis by the traffic consultant. Some of these forms include a field for the city in which the intersection is located. Although these intersections are actually within the jurisdiction of the city of Los Angeles, the traffic consultant used San Pedro or Wilmington to provide context for analysis purposes. This identification does not affect the accuracy of the analysis because the jurisdictional information is not relevant to the analysis.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P8-2

The comment expresses disappointment in the fact that the Los Angeles Police Department did not provide information about the response times for the Angels Gate and Royal Palms shaft sites.

The information was requested, and neither the Sanitation Districts of Los Angeles County (Sanitation Districts) nor the U.S. Army Corps of Engineers (Corps) has the means to compel the police department to provide the information.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P8-3

The comment suggests that the EIR/EIS process include opportunities for the public to suggest new uses for recycled water.

As described in Appendix 1-B of the draft EIR/EIS, since 2006, the Sanitation Districts conducted over 500 public outreach meetings with public officials; civic and community groups; businesses; environmental organizations; news media; and various local, state, and federal agencies. This effort facilitated a productive exchange of information and ideas between the Sanitation Districts and stakeholders regarding all components of the Clearwater Program, including reuse opportunities for recycled water.

The Sanitation Districts and Corps recognize that recycled water is an essential regional resource, which is why one of the four primary objectives of the Clearwater Program is to "provide support for emerging recycled water reuse…opportunities." As described in Chapter 1 of the draft Master Facilities Plan, the Sanitation Districts have pioneered water reclamation and reuse in Southern California, beginning with the completion of the Whittier Narrows Water Reclamation Plant in 1962. The Sanitation Districts now own and operate 10 water reclamation plants (WRPs) that produce approximately 165 million gallons per day of high-quality recycled water. Approximately half of the recycled water is reused at over 640 sites throughout Los Angeles County for groundwater replenishment; industrial, commercial, and recreational applications; habitat maintenance; and agricultural and landscape irrigation. This message has been and will continue to be an important component of the Sanitation Districts' public outreach and education efforts.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P8-4

The comment requests additional information about the bid process, cost overruns, street sweeping, telephone contacts, and graffiti removal.

The project would be competitively bid upon completion of final design. The Sanitation Districts would award the project to the lowest qualified bid for each construction contract.

A contingency consistent with industry standards for a project of this size was applied to the cost estimate to account for possible overruns.

It is the Sanitation Districts' standard practice to require contractors have a motor sweeper on the job site at all times to keep paved areas acceptably clean wherever construction is occurring. In addition, implementing South Coast Air Quality Management District Rule 403 would reduce dust emanating from the job site because watering would occur at least three times a day. As part of the community outreach, a contact number would be established to provide people with a means to express their concerns during construction.

It is also the Sanitation Districts' standard practice to require contractors remove graffiti within 24 hours of notification. Implementation of Mitigation Measure (MM) AES-1 (same as MM AES-3a), as described in the draft EIR/EIS, would ensure maintenance of the aesthetic treatments by removing graffiti in a timely manner.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P8-5

The comment asks whether the final EIR/EIS will be available in the local libraries.

The final EIR/EIS will be available in hard copy format at the Carson Regional Library, the Los Angeles Public Libraries' San Pedro and Wilmington Branches, and the Sanitation Districts' offices in Whittier. In addition, the EIR/EIS can be accessed electronically on the Sanitation Districts' website, the Clearwater Program website, or compact disc.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P9: George Radovcich – Resident (March 8, 2012, Public Hearing at the Crowne Plaza Los Angeles Harbor Hotel, San Pedro, California)

Commenter P9

MR. RADOVCICH: Hi, my name is George Radovcich. I'm a resident in San Pedro.

I'm completely against Alternative 4. We live in a peninsula, and Western Avenue and Gaffey Street are all the way out. Western Avenue is honeycombed with sewers and all these things, and we've had -- we've had sink holes in the past. We've had block -- if you would block -- if one of these things fails on Western Avenue, we're doomed here essentially. P9-1

And another thing, this is a county project. P9-2

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1 Why is this -- why is San Pedro burdened with a county
2 project and going through residential neighborhoods?
3 Why isn't this going through county land? What happened
4 to Palos Verdes? The original pipeline is in Palos P9-2 cont.
5 Verdes. My uncle was here when the original pipeline
6 was built. He said it was very noisy. In fact, you
7 could feel the vibrations of their equipment.
8 I live off of Dodson Avenue. The neighbors
9 there don't even know about this yet. You really
10 haven't been vetted out. We have a few of -- I think
11 only one that I know of other than this one where you P9-3
12 actually had community involvement. But they're going
13 to hear about it now. In fact, I told a few neighbors
14 today, and they are outraged. They couldn't believe it.
15 And your maps -- I called your office to find
16 out if I could get real maps where I could see exactly
17 where that pipe is going to go through down Dodson next P9-4
18 to Seventh Street School, beautiful school, and
19 beautiful Dodson Avenue has some of the best and nicest
20 homes in San Pedro.
21 My brother is an engineer, and he wanted me to
22 ask tonight. He said, what happens when the settling
23 occurs? What is the settling you are expecting to P9-5
24 occur, and who is going to draw -- who is going to pay
25 for that damage to homes along Dodson Avenue when that

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1 settling occurs? I mean, cracks are going to appear,
2 and you're going to say, oh, it's not because of our
3 pipeline, but it just happens after the pipeline is
4 built. And what happens if we have a major failure P9-5 cont.
5 along that pipeline on Dodson Avenue and Dodson sinks?
6 Who is going to pay those homeowners for that? What's
7 going to happen to property values? And are people
8 going to have to disclose that they're selling a home P9-6
9 where 10 feet away and 110 feet down is a 24- -- a
10 22-inch pipeline? I mean . . .
11 And it just disturbs me that this is all going
12 out to Royal Palms again. In the past we had the DDT
13 problems. In 2007 there was a study that showed that
14 the DDT levels still at Royal Palms in 2007 are five
15 times greater than anywhere on earth. I mean, are we --
16 are we just going to have another pipe so that we can P9-7
17 put more stuff out there?
18 I think Alternative 1, if you're going to go
19 with anything, is your best alternative because at least
20 it's going to extend that pipeline further out to the
21 shelf, and it won't go through residential neighborhoods
22 where, frankly, if there is settling or if there is any
23 damage to those homes, who is going to be responsible?
24 I don't understand why the City of Los Angeles
25 is allowing you to do this when back in 19- -- the P9-8

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1 earlier time when you built the pipeline, it was greatly P9-8 cont.
2 discouraged by the City, and that's why you had to go
3 out to Palos Verdes. Of course, there was no homes
4 there at the time. You didn't have to worry about the
5 noise factor. I noticed that your noise level -- you
6 are going to be 10 dB over the Los Angeles limit for --
7 for nighttime ambient noise, which is 55 dB. According P9-9
8 to your environmental report, it's going to be 65.
9 Now, people living a long touch from the
10 cavity, they don't realize the vibration and the noise
11 level that's going to go on 24/7 in ten-hour shifts. I
12 mean once this starts, it's going to be too late. And
13 then the people are just going to be saddled with it.
14 What's going to happen to our property values when all P9-10
15 this is going on for years?
16 The real sad part is that all this is going out
17 to Royal Palms again. That's a big, big mistake, and
18 you're saving a couple of bucks and in the big scheme of
19 things, with California completely underwater, you know,
20 they go for the good -- let's go for Number 1. P9-11
21 Let's go for the more extensive one which
22 completely alleviates going under any neighborhood,
23 alleviates messing up Western Avenue, alleviates messing
24 up Gaffey Avenue, and let's go for the good stuff. And
25 that's going to solve another outfall which will be

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further out on the shelf, and it won't add to the stuff that we already have at Royal Palms, which is pretty bad. It's pretty bad already. P9-11 cont

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Response to Comment P9-1

The comment expresses opposition to Alternative 4 (the recommended alternative) due to concerns related to the potential for sink holes along Western Avenue.

The draft EIR/EIS discussed the potential for ground failure to affect people, structures, or property in Section 8.4.6.2. Impact GEO-6 addressed unstable earth conditions or changes in geologic substructure, and found that there was a potential for settlement during tunneling, and that this impact would be significant. Therefore, mitigation was included in the draft EIR/EIS to reduce this impact to less than significant. Mitigation Measure (MM) GEO-6a requires geological investigations to characterize the subsurface conditions and anticipated ground behavior, and that recommendations identified in the investigation be incorporated into the final design, along with contingency measures if excessive settlement were to occur. MM GEO-6b requires a detailed plan for construction monitoring to minimize potential ground surface settlement along the onshore tunnel.

A considerable number of Clearwater Program public outreach presentations were conducted in the Rancho Palos Verdes area, and a concern raised was whether the proposed tunnel could result in a situation similar to the January 2005 sinkhole in Western Avenue just north of Westmont Avenue. Along Western Avenue, the proposed reinforced concrete tunnel would be constructed through a rock-like material at depths ranging from 350 to 450 feet below ground surface. Conversely, the January 2005 sink hole resulted from the storm-related failure of an old corrugated metal storm drain constructed through much looser material at a depth of only 25 feet. Therefore, the circumstances are significantly different.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P9-2

The comment suggests that the Clearwater Program is a county project and asks why San Pedro is being burdened with a county project going through residential neighborhoods. The comment suggests that the project should go through county land or Palos Verdes. The comment also expresses concern about noise and vibration during construction.

The Clearwater Program is not a county of Los Angeles project. The project proponent and lead agency under the California Environmental Quality Act (CEQA) is the Sanitation Districts of Los Angeles County (Sanitation Districts), which consist of 23 independent special districts that serve the wastewater and solid waste needs for 5.7 million people in Los Angeles County, with a service area of 820 square miles and 78 cities and unincorporated territory within the county.

The Clearwater Program focuses on the Joint Outfall System (JOS), which serves portions of the city of Los Angeles, including areas in the vicinity of the San Pedro community, as shown on Figure 7-9 of the draft MFP. The recommended alternative (Alternative 4) would regionally benefit the entire JOS by providing for reliable Joint Water Pollution Control Plant (JWPCP) effluent management and would locally benefit the San Pedro community by reducing the potential of having to bypass JWPCP effluent flow into the Wilmington Drain. As described in the draft EIR/EIS, most of the construction-related project impacts would occur at the JWPCP West shaft site, which is located on the border between the city of Los Angeles and city of Carson. The majority of the residences and businesses in the immediate vicinity of the JWPCP West shaft site are within the JOS service area. Additionally, the residents of the South Shores area of San Pedro would benefit from the project because they are within the Sanitation Districts' service area for wastewater treatment.

Chapter 6 of the draft Master Facilities Plan (MFP), as summarized in Chapter 3 of the draft EIR/EIS, presented an alternatives analysis process that systematically applied multiple screening criteria (e.g., public input, cost effectiveness, long-term uncertainty, operational considerations, constructability, and environmental impacts) to establish a reasonable range of alternatives, including the highest-ranked recommended alternative and tunnel alignment, that feasibly met the project objectives.

As described in Section 2.2.4.3 of the draft EIR/EIS, the existing 8- and 12-foot tunnels were constructed in 1937 and 1958, respectively. For both existing tunnels, the tunnel sections located between the JWPCP and approximately Anaheim Street were built by traditional open cut construction methods, which can be noisy. The remaining tunnel sections from approximately Anaheim Street to Royal Palms Beach were constructed by conventional tunneling methods, which were less disruptive. Starting from that location, the ground surface above the existing tunnels rises rapidly, with tunnel depths quickly exceeding 150 feet and reaching a maximum of approximately 600 feet. As described in Section 3.3.2.1 of the draft EIR/EIS, the new tunnel would be constructed with a tunnel boring machine (TBM) operating at depths significantly below the ground surface. Section 14.4.1.4 of the draft EIR/EIS specifically addressed the potential groundborne vibrations and noise impacts from tunneling operations. The analysis of the draft EIR/EIS determined that vibration and groundborne noise from the TBM would be below the impact threshold, and that any vibrations caused by the haul train, which would be used to remove excavated material, would be below the impact threshold where the tunnel base depth is greater than 110 feet below the ground surface. In the vicinity of Dodson Avenue, the tunnel would be approximately 380 feet below the ground surface. Therefore, no vibrations from the tunneling operations should be perceived. In addition, implementation of MM NOI-2a (rail maintenance plan) and MM NOI-2b (vibration control plan) would further reduce any groundborne vibration impacts resulting from the tunneling operations to less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P9-3

The comment suggests that there was insufficient public outreach, particularly to the communities along Dodson Avenue.

In developing a plan that meets the needs of the communities and businesses served by the JOS, the Sanitation Districts felt it was important to involve the public from the onset. Appendix 1-B of the draft EIR/EIS included a comprehensive agency and public scoping report. Since 2006, the Sanitation Districts have conducted over 500 outreach and coordination meetings with public officials; civic and community groups; businesses; environmental organizations; news media; and various local, state, and federal agencies. At the onset of the planning effort, a project website (www.ClearwaterProgram.com) and an information hotline (877-300-WATER) were established. In addition, three newsletters were circulated in the project area to keep the public and interested parties apprised of progress being made during the planning process. The mailing list for the third newsletter included every parcel along each of the final four tunnel alignment alternatives.

In March 2008, at the inception of the alternatives analysis process and long before any decisions were made, the Sanitation Districts conducted a series of public workshops in San Pedro, Carson, Wilmington, and Rancho Palos Verdes. Also, in October and November 2008, public scoping meetings to inform the preparation of the draft EIR/EIS were held in San Pedro, Carson, Wilmington, and Whittier. Public hearings on the draft EIR/EIS were conducted in San Pedro, Carson, and Whittier in March 2012. All of these public workshops and hearings were advertised in several newspapers including the Daily Breeze,

Press Telegram, Random Lengths, Beach Reporter, Peninsula News, Impacto, La Opinion, Wave Pub West Edition, Inland Valley Daily Bulletin, and San Gabriel Valley newspapers.

The Clearwater Program outreach efforts included the three neighborhood councils in San Pedro. Specifically, the Sanitation Districts met with the full Coastal San Pedro Neighborhood Council in August 2008 and July 2011, the full Central San Pedro Neighborhood Council in July 2011, the President of the Northwest San Pedro Neighborhood Council in January 2007, the full Northwest San Pedro Neighborhood Council in July 2011, and the Port Committee of the Northwest San Pedro Neighborhood Council in August 2011.

Overall, this comprehensive outreach program greatly exceeded the public noticing, disclosure, and scoping requirements and recommendations of CEQA and the National Environmental Policy Act (NEPA).

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P9-4

The comment requests a map that depicts the exact tunnel alignment location under Dodson Avenue (i.e., the recommended alternative).

Under Alternative 4 (the recommended alternative), the exact tunnel alignment within the Dodson Avenue right-of-way will be determined as part of the final design process. However, at this point in the planning process, it is anticipated that the tunnel would be approximately 380 feet below the ground surface along Dodson Avenue.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P9-5

This comment requests information about who would be responsible for fixing any damages to homes should ground settlement occur as a result of the tunneling operations.

Section 8.4 of the draft EIR/EIS analyzed potential settlement impacts along tunnel alignments for each alternative and determined that impacts would be less than significant after implementation of MM GEO-6a and MM GEO-6b. Along Dodson Avenue, the tunnel would be in rock-like material approximately 380 feet below the ground surface; therefore, the potential for settlement would be highly improbable. However, in the unlikely event settlement-related damage to homes occurred as a direct result of the tunnel construction, the Sanitation Districts and/or contractor(s) would be responsible for paying for any repairs that are required.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P9-6

The comment asks what would happen to property values if homeowners were required to disclose the presence of a tunnel near or beneath their property.

The effect an easement would have on property values is beyond the purview of a draft EIR/EIS under both CEQA and NEPA. Nonetheless, a homeowner would not need to disclose the presence of the tunnel if it were located in the public street right-of-way. The tunnel would be treated the same as any other

utility in the street, such as those conveying potable water, natural gas, or electricity. Where the tunnel crosses private property, an easement would be required as indicated in Table 12-6 of the draft EIR/EIS. The Sanitation Districts would make every attempt to obtain these easements from property owners voluntarily at fair market value. During the process of a real estate transaction, any easements associated with the property would be disclosed with the property title search.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P9-7

The comment raises concerns that another ocean outfall would deposit more dichlorodiphenyltrichloroethane (DDT) on the Palos Verdes Shelf. The comment also suggests that Alternative 1 is superior to Alternative 4 (the recommended alternative) because it would discharge effluent further offshore and avoid residential neighborhoods. Finally, this comment asks who would be responsible for any damage to homes caused by settlement.

As described in Chapter 7 of the draft MFP and Chapter 3 of the draft EIR/EIS, Alternative 4 (the recommended alternative) would not result in the construction of a new ocean outfall; it would require rehabilitation of the existing ocean outfalls, which is also an element of the other three project alternatives. As described in Section 2.2.4.3 of the draft EIR/EIS, industries have been prohibited from discharging DDT into sewers since the mid-1970s. Therefore, neither Alternative 4 (the recommended alternative) nor the other three project alternatives would result in increased levels of DDT on the Palos Verdes and San Pedro Shelves.

Although Alternative 1 would discharge effluent further from the shore than Alternative 4 (the recommended alternative), diffuser performance is determined primarily by discharge depth, not offshore distance, and the discharge depth for both alternatives would be approximately 200 feet. Furthermore, Alternative 4 (the recommended alternative) would avoid marine environment impacts associated with constructing a new riser/diffuser and would minimize truck trips and air emissions due to its shorter tunnel length. Conversely, Alternative 1 would result in greater impacts on the marine environment due to new riser/diffuser construction and significantly more air emissions and truck trips due to its longer tunnel length. Based on the overall environmental analysis, it was concluded that Alternative 4 (the recommended alternative) is the environmentally preferred and superior alternative.

Each of the four alternatives would be aligned through residential neighborhoods but would generally remain within the public rights-of-way to the extent feasible. As previously described in Response to Comment P9-5, Section 8.4 of the draft EIR/EIS analyzed potential settlement impacts along tunnel alignments for each alternative and determined that impacts would be less than significant after implementation of MM GEO-6a and MM GEO-6b. However, in the unlikely event tunnel construction would result in settlement-related damage to homes as a direct result of the tunnel construction, the Sanitation Districts and/or contractor(s) would be responsible for paying for any repairs that are required.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P9-8

The comment expresses concerns that the city of Los Angeles is allowing the Clearwater Program to be constructed through the city of Los Angeles.

As previously described in Response to Comment P9-3, Appendix 1-B of the draft EIR/EIS included a comprehensive agency and public scoping report. Since 2006, the Sanitation Districts have conducted over 500 outreach and coordination meetings with public officials; civic and community groups; businesses; environmental organizations; news media; and various local, state, and federal agencies. This outreach included various departments within the city of Los Angeles and several of the neighborhood councils that report to the Los Angeles City Council. To date, the city of Los Angeles has not expressed any opposition to the Clearwater Program, although two of the neighborhood councils (Commenters A9 and A15) have provided comments.

Additionally, as previously described in Response to Comment P9-2, the JOS serves portions of the city of Los Angeles, including areas in the vicinity of the San Pedro community. The recommended alternative (Alternative 4) would regionally benefit the entire JOS by providing for reliable JWPCP effluent management and would locally benefit the San Pedro community by reducing the potential of having to bypass JWPCP effluent flow into the Wilmington Drain.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P9-9

The comment states that noise levels would be above the nighttime noise limits for the city of Los Angeles.

As discussed previously in Response to Comment P9-2, no vibrations from the tunneling operations should be perceived along Dodson Avenue due to the depth, which would be well over the 110-foot threshold. Any vibration impacts at locations where the tunnel is aligned within 110 feet of sensitive receptors would be mitigated to less than significant with the implementation of MM NOI-2a and MM NOI-2b. Section 14.4.1.4 of the draft EIR/EIS notes that vibration from TBM operations occurs at low frequencies, whereas groundborne noise typically is caused by higher frequency vibration. Therefore, it is anticipated that audible groundborne noise from TBM operations would not be perceived by sensitive receptors located above the tunnel.

As described in Section 14.4.5.2 of the draft EIR/EIS, noise impacts at the JWPCP West shaft site would be less than significant, and no mitigation is required. As shown in Table 14-30 of the draft EIR/EIS, with the noise barrier in place, residences located within 200 feet of the JWPCP West shaft site could be exposed to construction noise levels of 65 A-weighted decibels (dBA), which would be less than 5 decibels (dB) above the lowest measured ambient level. Therefore, construction noise at this site would not exceed city nighttime noise standards at nearby residences, or daytime noise standards at recreation areas. As described in Section 14.4.6.2 of the draft EIR/EIS, noise impacts at the Royal Palms shaft site would be less than significant with mitigation. As shown in Table 14-35 of the draft EIR/EIS, with the noise barrier in place, the nearest residential receptors could be exposed to construction noise levels of 63 dBA at a distance of 600 feet from the shaft site. Table 14-35 also indicated that recreational use at Royal Palms Beach within a 275-foot radius of the shaft site would be exposed to construction noise levels of 63 dBA or more (an increase of 5 dB above the ambient level). However, implementation of MM NOI-1a (noise-reducing construction practices) and MM NOI-1b (complaint/response tracking program) would reduce noise at sensitive receptors to below local standards. Therefore, nighttime noise limits would not be exceeded for Alternative 4 (the recommended alternative) at both shaft sites.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P9-10

The comment asks how the impacts of construction would affect property values.

See Response to Comment P9-6.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P9-11

The comment expresses a preference for Alternative 1 to avoid impacts on neighborhoods near Western Avenue and Gaffey Street, and on Royal Palms Beach.

As previously discussed in Responses to Comments P9-4 through P9-6, the tunnel would generally be located beneath public rights-of-way. With the use of the TBM and the depth of the tunnel, it is unlikely that the streets above the tunnel would be affected.

As discussed in Chapter 13 of the draft EIR/EIS, rehabilitation of the existing ocean outfalls, which would occur under each of the alternatives, would result in a temporary impact on water-contact recreation at Royal Palms Beach for approximately 9 months. This impact would be less than significant because the impact would be temporary and other similar water-contact recreational facilities would remain available during the construction period.

Chapter 13 of the draft EIR/EIS also discussed the operational impacts of the use of the rehabilitated ocean outfalls, which would occur under each alternative. Based on past and present performance of the JWPCP secondary treatment and the past and present performance of the existing ocean outfalls, the treated effluent discharges through the existing outfalls currently meet the national pollutant discharge elimination system requirements and protect the designated beneficial uses. Because post-rehabilitation effluent quality would be the same as existing conditions, continued use of the existing ocean outfalls would not impair beneficial uses at Royal Palms Beach.

As previously described in Response to Comment P9-7, Alternative 1 would result in greater impacts on the marine environment due to new riser/diffuser construction and significantly more air emissions and truck trips due to its longer tunnel length. Based on the overall environmental analysis, it was concluded that Alternative 4 (the recommended alternative) is the environmentally preferred and superior alternative.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P10: Cathy Beauregard – Resident (March 8, 2012, Public Hearing at the Crowne Plaza Los Angeles Harbor Hotel, San Pedro, California)

Commenter P10

MS. BEAUREGARD: Good evening. I'm sorry I missed your presentation, but I've been involved with the department of sanitation and water policy issues for about 12 years now. I'm here to be in favor of this project. I think it's a great idea. We've been having a lot of problems with our infrastructure, and I'm thinking it's a great idea. It's about time we started improving our infrastructure so that we can meet the capacity for the population we have. P10-1

So I just wanted to say that I'm in support of this project, and that's all. Thank you.

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Response to Comment P10-1

The comment expresses support for the project.

The Sanitation Districts of Los Angeles County and the U.S. Army Corps of Engineers appreciate the commenter's support for the Clearwater Program. However, the comment does not address the analysis in the EIR/EIS, so no response is necessary. The comment will be provided to the decision makers for their consideration.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P11: Pat Rome – Resident (March 8, 2012, Public Hearing at the Crowne Plaza Los Angeles Harbor Hotel, San Pedro, California)

Commenter P11

MS. ROME: My name is Pat Rome, and I'm a resident. I just live on the north side of Harbor Park right on the Pacific Coast Highway.

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And for the last two years I've been going to meetings about Prop O, a multimillion-dollar project to try to clean up the Machado Lake and the Wilmington Drain. And when I got the information about this hearing, I see that you've got this pipeline going right through Harbor Park, and I wanted to find out where you are in conjunction with this multimillion-dollar project that's happening on this end, if your agency knows anything about it, or you're working in conjunction with it. Because from what I've heard, the whole Prop O is stopped now because they found a least sparrow vireo, which is a tiny little bird. P11-1

So I'm concerned that you're going to either come in after or before, and then you're going to turn around and dredge, and it's going to be upsetting to everything. And I think at this point we can't be penny-wise and pound-foolish. You can't save a couple -- I know it's a million dollars, but to save that, I think you have to look at the big picture and what can be impacted, and I don't think San Pedro or Wilmington needs any more of this.

Response to Comment P11-1

The comment asks if the tunnel construction for Alternative 4 (the recommended alternative) in the area of Ken Malloy Harbor Regional Park will be coordinated with the Proposition O-funded improvement of Machado Lake and Wilmington Drain that was recently stopped after discovery of a protected bird species (least Bell's vireo). The commenter is concerned that tunnel construction would negatively impact, or be impacted by, this nearby project when it is restarted.

The Machado Lake Ecosystem Rehabilitation Project and the Wilmington Drain Multi-Use Project are scheduled to be completed before tunnel construction would commence. As described in the Preliminary Screening Analysis for the Clearwater Program (Appendix 1-A of the draft EIR/EIS), the onshore tunnel alignments would be constructed more than 70 feet below ground surface, sometimes as deep as 450 feet. Under Alternative 4 (the recommended alternative), the tunnel would be constructed at a depth of approximately 80 feet beneath Ken Malloy Harbor Regional Park. Therefore, the tunnel for Alternative 4 would not have an impact on the Machado Lake/Wilmington Drain project or any biological resources, including potential least Bell's vireo habitat.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P12: Dave McCulloch – Resident (March 8, 2012, Public Hearing at the Crowne Plaza Los Angeles Harbor Hotel, San Pedro, California)

Commenter P12

MR. McCULLOCH: Dave McCulloch, and I'm a resident. The first thing that pops out on the handout, you have the recommended route, but there is no finalization of the proposed route for the pipeline. You don't have to, and I guess this is on the EIR. Yeah, right, it is on the EIR, but I hope this doesn't mean that it's a foregone conclusion that this is the route. There is a concern -- or it raises the question when I see the crooked route that the tunnel is proposed on the recommended route down Gaffey, up Capitol, down Western, and across. This route is really proposed for underneath streets rather than a straight line that would knock miles off the pipeline. A straight line -- why isn't that an option is my question? P12-1

And I'm mostly concerned about traffic, certainly for the residential residents' point of view. P12-2

One year significant environmental effects or air quality impacts when construction takes place, equipment and vehicles' exhaust. Where does that take place? All of this is underground from 70 to 400-some-odd feet underground. Why are we worried about the construction equipment other than the portals, three portal sites? P12-3

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1 Why would that be a concern to residents? Is it a
2 concern to residents?
3 I know years ago when this first came out, we
4 went to the first meeting regarding this Clearwater
5 project, and there was a proposed portal right here in
6 Peck Park, 20 feet in diameter where construction
7 material entered and exited the tunnel site and where
8 construction debris was lodged. The debris would be
9 removed from that site as well. And they're talking
10 about hundreds of trucks moving up and down in the
11 community throughout the area to transport that debris P12-3 cont.
12 away from the tunneled sites.
13 Now, I do believe from this presentation that
14 there's not going to be a portal between the plant and
15 the coastline. Is that the case? Why? And if there is
16 an air quality impact due to construction and equipment
17 or vehicles, is that impact between those two points?
18 That is the main concern that I have.
19 I hope this is somehow answered. From what I
20 can read online, I have not seen it so far. And it will
21 be a question that is continually raised by me and
22 perhaps others as we go forward with the project.
23 One other question that my wife mentioned to me
24 just now, there are some LPG plants down on Gaffey P12-4
25 Street area and the proposed route -- the recommended

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route -- I've got to use those words -- I don't want to accept recommended as to mean this is the route that it's going to be because there are three other proposed routes. So I am concerned about the LPG and air quality and the waste, and the route as it goes under the major streets rather than in a straight line, and the impact from emptying. P12-4 cont. P12-5

It seems like a tunnel this long is going to have to have some way to vent so that this can be an even and consistent flow of materials through that tunnel, that long tunnel, where those vents will be, and what impact those vents will have? Okay. P12-6

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Response to Comment P12-1

The comment asks why a straight tunnel alignment option was not considered in the draft EIR/EIS.

The draft EIR/EIS analyzed a reasonable range of alternatives that feasibly meets the project objectives. These final feasible alternatives were determined through the alternatives analysis process presented in Chapter 6 of the draft Master Facilities Plan (MFP) and summarized in Chapter 3 of the draft EIR/EIS. A straight tunnel alignment option was evaluated as one of 23 conceptual onshore tunnel options in Section 6.3.3.1 of the draft MFP. This straight tunnel alignment option would parallel the existing two tunnels. However, the existing 68 tunnel easements would not permit construction of a new tunnel, and a parallel tunnel alignment just beyond the existing easements would require approximately 1,060 new easements. Therefore, this conceptual option was eliminated, and the remaining 22 conceptual onshore tunnel options that were aligned primarily through public rights-of-way were carried forward into the analysis as preliminary options.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P12-2

The comment expresses concerns about traffic.

As discussed in Chapter 18 of the draft EIR/EIS, traffic impacts associated with Alternative 4 would be less than significant for both the construction and operational phases of the project. Additionally, as described in Section 18.3.4 of the draft EIR/EIS, the city of Los Angeles requires the preparation of traffic management plans for major construction projects that include designation of haul routes, among other elements, to ensure that any construction-related effects are minimized to the greatest extent possible.

A subsequent traffic analysis was conducted for the final EIR/EIS to ensure that the recent closure of Paseo Del Mar would not result in greater impacts than those evaluated in the draft EIR/EIS, if Paseo Del Mar was not reconstructed before construction began. This analysis confirmed the findings of the draft EIR/EIS that construction of Alternative 4 (the recommended alternative) would not result in significant traffic impacts on the surrounding street system. This additional analysis is included in Appendix 18-D of the final EIR/EIS.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P12-3

The comment asks for clarification on the locations where emissions would occur, the methods of construction, the potential inclusion of an access shaft at Peck Park, and the associated construction truck traffic.

Figures 3-4 through 3-15 of the draft EIR/EIS showed the locations of the proposed construction. As described in Section 3.3.2.1 of the draft EIR/EIS, the tunnel would be constructed with a tunnel boring machine (TBM). Therefore, all tunneling activities would be underground except for the removal and trucking of excavated materials at the shaft sites. Aboveground construction for Alternative 4 (the recommended alternative) would occur at Royal Palms Beach and the Joint Water Pollution Control Plant (JWPCP) as the shaft sites are constructed. For Alternative 4, the tunnel emissions would exit out of the JWPCP West shaft until the TBM reaches the Royal Palms shaft site, at which point the TBM would be removed.

There would not be a shaft site at Peck Park for any of the alternatives. As described in Section 6.3.3.3 of the draft MFP, Peck Park was identified as one of 13 preliminary options for an intermediate shaft site. However, during Level 2 screening for viable options, Peck Park was eliminated from consideration based on conflicts with public recreational uses and public input. Alternative 4 (the recommended alternative) would have one working shaft site at the JWPCP and one exit shaft site at Royal Palms Beach.

The number of trucks associated with tunnel construction would vary according to the project alternative. Alternative 4 (the recommended alternative), would result in the least number of truck trips. Truck trips for each alternative were included in Chapters 3 and 18 and Appendix 5-B of the draft EIR/EIS, and their air quality impacts were analyzed in Chapter 5 of the draft EIR/EIS.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P12-4

The comment expresses concern with the proximity of the recommended alternative to the Rancho Liquefied Petroleum Gas (LPG) facility located near the intersection of Gaffey Street and Westmont Drive.

Alternative 4 (the recommended alternative), would traverse under Gaffey Street between Anaheim Street and Capitol Drive. The two large Rancho LPG butane storage tanks are approximately 600 feet east of the recommended tunnel alignment. At this location, the tunnel invert would be approximately 100 feet below the ground surface. Therefore, given the tunnel location and depth, construction and operation of the tunnel would not have an impact on the Rancho LPG facility, and an upset at the Rancho LPG facility would not have an impact on the tunnel.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P12-5

The comment provides a summary of the commenter's major concerns.

See Responses to Comments P12-1 through P12-4.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P12-6

The comment requests information about additional vent locations along the tunnel alignment for Alternative 4 (the recommended alternative).

As previously described in Response to Comment P12-3, ventilation, air emissions, and all materials going in or out of the tunnel would occur at the JWPCP West shaft site on the Sanitation Districts of Los Angeles County's JWPCP property. No intermediate vent shafts are proposed between the JWPCP West shaft site and the Royal Palms shaft site.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P13: Jody James – Board Member, San Pedro Peninsula Homeowners United (March 8, 2012, Public Hearing at the Crowne Plaza Los Angeles Harbor Hotel, San Pedro, California)

Commenter P13

Okay. So I have a presenter. That would be Jody James.

MS. JAMES: Hi, I'm a member on the board of the San Pedro Peninsula Homeowners United on the San Pedro Peninsula Owners Coalition, and it includes the past presentation and using what we know from following the path of the city project. They have been referred by us and often by us and one of the things pointed out by a number of --

(Pause in the proceedings to replace microphone.)

-- this project is to benefit. Sorry -- many P13-1

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other communities all around, but we are bearing the brunt. You're also putting all your eggs in one basket going through this way. I am sure I'm not the first one that's pointed this out. This is kind of a redundancy.

And don't you want something to rely on? Going through the port would be the less disruptive to our people, and if you spread the cost, the extra cost out over all these years and all the people that will be paying for this, that's really not a very big extra cost to bear. P13-1 cont.

And I'm sure, as I know another has pointed out and sent you documents, this project has taken a green line on this preferred path. It goes right into the zone that's called the Palos Verdes rupture zone, and this has been identified. We didn't always know about this. We've just known it about six months. In 1996 city and planning documents with maps show that this is a rupture zone, and what this means is it's the convergence of several faults that come all together here. That's why they're calling it the rupture zone. And as I heard the last person point out, these huge butane and propane tanks sit right on top of this area on Gaffey before it takes a turn to go to Capitol. P13-2

I'd just like you to do some things that make some sense, and know all of these issues, and don't P13-3

1 continue to bring the burdens to us and the hazards to
2 us. Make the best choices. Take this to the port, P13-3 cont
3 spread the cost out, and spare us the hazards and the
4 extra traffic and burdens that we'll bear if you go this
5 route. Don't choose this plan.
6 And if you do and say there's no choice with
7 this plan, I propose you say there is a public need --
8 eminent domain. Take those tanks out of here. To kill
9 two birds with one stone and get rid of that hazard and
10 get it out of here and use that site for the public P13-4
11 purpose of your operations, and when you're finished,
12 turn that into parking for special events at the port
13 and for park and ride or for parking for the soccer
14 field that's right above it. Take care of our needs,
15 and quit giving us the sharp end of the stick.
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Response to Comment P13-1

The comment expresses concerns about the San Pedro area being burdened by Alternative 4 (the recommended alternative) and states a preference for an alternative going through the Port of Los Angeles, despite the higher cost.

The Clearwater Program focuses on the Joint Outfall System (JOS), which serves portions of the city of Los Angeles, including areas in the vicinity of the San Pedro community as shown on Figure 7-9 of the draft Master Facilities Plan (MFP). Alternative 4 (the recommended alternative) would regionally benefit the entire JOS by providing for reliable Joint Water Pollution Control Plant (JWPCP) effluent management and would locally benefit the San Pedro community by reducing the potential of having to bypass JWPCP effluent flow into the Wilmington Drain. As described in the draft EIR/EIS, most of the construction-related project impacts would occur at the JWPCP West shaft site, which is located on the border between the city of Los Angeles and city of Carson. The majority of the residences and businesses in the immediate vicinity of the JWPCP West shaft site are within the JOS service area. Additionally, the residents of the South Shores area of San Pedro would benefit from the project because they are within the Sanitation Districts of Los Angeles County's (Sanitation Districts') service area for wastewater treatment.

Chapter 6 of the draft MFP, as summarized in Chapter 3 of the draft EIR/EIS, presented an alternatives analysis process that systematically applied multiple screening criteria to establish a reasonable range of alternatives, including the highest-ranked recommended alternative that feasibly met the project objectives. Cost effectiveness was one of the screening criteria considered in the alternatives analysis. Alternatives 1 and 2, each of which would be aligned through the Port of Los Angeles, would cost approximately $810 million (147 percent) and $430 million (78 percent) more to construct, respectively, than the $550 million estimated for Alternative 4 (the recommended alternative).

Although the savings associated with Alternative 4 are significant, other screening criteria, such as environmental impacts, also factored heavily into ranking the alternatives. Alternative 4 would avoid marine environment impacts associated with constructing a new riser/diffuser and would minimize truck trips and air emissions due to its shorter tunnel length. Conversely, Alternatives 1 and 2 would result in greater impacts on the marine environment due to new riser/diffuser construction and significantly more air emissions and truck trips due to their longer tunnel lengths. Based on the overall environmental analysis, it was concluded that Alternative 4 (the recommended alternative) is the environmentally preferred and superior alternative.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P13-2

The comment expresses concern that Alternative 4 (the recommended alternative) traverses the Palos Verdes Fault and mentions the presence of the Rancho Liquefied Petroleum Gas (LPG) facility near this area.

Each of the four alternatives analyzed in the draft EIR/EIS must cross the Palos Verdes Fault as shown on Figure 8-1 of the draft EIR/EIS. Implementation of Mitigation Measure GEO-2, which involves performing site-specific fault hazard investigations to minimize damage to the tunnel and structures, would reduce impacts to less than significant. The geotechnical recommendations will be incorporated into the final design and may include remediation measures, such as special lining systems inside the tunnel through the fault zone.

The Rancho LPG facility is located over 4,000 feet south of where the Palos Verdes Fault crosses the recommended tunnel alignment (Alternative 4). The two large Rancho LPG butane storage tanks are approximately 600 feet east of the tunnel alignment. At this location, the tunnel invert would be approximately 100 feet below the ground surface. Therefore, given the tunnel location and depth, construction and operation of the tunnel would not have an impact on the Rancho LPG facility, and an upset at the Rancho LPG facility would not have an impact on the tunnel.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P13-3

The comment is concerned that the hazards and traffic resulting from Alternative 4 (the recommended alternative) would unfairly burden the San Pedro community, and expresses a preference for an alternative that would go through the Port of Los Angeles.

See Response to Comment P13-1 regarding the relative burden on the San Pedro community and the reasons that Alternative 4 is the recommended alternative. See Response to Comment P13-2 regarding the comparative hazard for each alternative.

As discussed in Chapter 18 of the draft EIR/EIS, traffic impacts associated with Alternative 4 (the recommended alternative) would be less than significant for both the construction and operational phases of the project. Additionally, as described in Section 18.3.4 of the draft EIR/EIS, the city of Los Angeles requires the preparation of traffic management plans for major construction projects that include designation of haul routes, among other requirements, to ensure that any construction-related effects are minimized to the greatest extent possible.

A subsequent traffic analysis was conducted for the final EIR/EIS to ensure that the recent closure of Paseo Del Mar would not result in greater impacts than those evaluated in the draft EIR/EIS, if Paseo Del Mar was not reconstructed before construction began. This analysis confirmed the findings of the draft EIR/EIS that construction of Alternative 4 (the recommended alternative) would not result in significant traffic impacts on the surrounding street system. This additional analysis is included in Appendix 18-D of the final EIR/EIS.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P13-4

The comment encourages the removal of the Rancho LPG facility through eminent domain as part of the project by turning the property into a shaft site during construction and a parking lot after construction.

Title 7 of the California Code of Civil Procedure contains laws regarding the circumstances by which public agencies can use eminent domain to acquire private property for projects that benefit the public, such as schools, roads, and police and fire stations. Eminent domain is the last measure a public agency can use to acquire private property, but the agency must first attempt to purchase the land by performing “good faith negotiations” with the property owner. The purchase price is usually set by the fair market value based on an appraisal. If the negotiations fail, then the public agency must file a Resolution of Necessity clearly stating why acquiring the land is the only option available for the progression of the project. Because the Rancho LPG facility was never identified as an essential shaft site location in either the draft MFP or draft EIR/EIS, there is no basis for the Sanitation Districts to modify Alternative 4 (the

recommended alternative) and to claim acquisition of the property as a necessary element for the completion of the project.

Additionally, both the California Environmental Quality Act and National Environmental Policy Act require that there be a nexus between an impact and mitigation imposed on the project. That is, mitigation cannot be imposed that does not serve to avoid or reduce a specific impact. The only significant and unavoidable impacts that would result from Alternative 4 (those for which mitigation cannot reduce the impacts to less than significant) would be those related to aesthetics, air quality, cultural resources, and greenhouse gases. None of these impacts would be reduced by the removal of the Rancho LPG facility. Therefore, removal of the Rancho LPG facility via eminent domain would not be appropriate mitigation.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P14: Katy Watkins – Resident (March 8, 2012, Public Hearing at the Crowne Plaza Los Angeles Harbor Hotel, San Pedro, California)

Commenter P14

MS. WATKINS: Good evening. My name is Katy Watkins, and I'm a resident, and I live across from Colony Park.

And I guess I'm going to be somewhat redundant because several people have already made the points I was going to make, one of which is the coordination with the Prop O project in Machado Park, in the Harbor Park about the dredging of the lake. It would be just -- I P14-1

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can just see all kinds of disaster coming with both of you trying to do it at the same time, dredging of the lake and going underneath it. So I'm hoping that you have addressed that issue. I'd like to be reassured that you have addressed the issue with the Prop O project in Harbor Park. And that's fine. I would trust that you, hopefully, would know what to do with that. P14-1 cont.

The second is the impacts on the tanks that the previous lady just discussed. I live around the corner from there. If it goes, I'm gone; I'm dead. My whole place goes. If those blow up, there have been studies that the whole area goes. Think about the vibration that you talked about that goes on underneath the ground which has already been established as very unstable tanks. They either need to come out before you do the project, or the project needs to go somewhere else. I am a hundred percent in support of infrastructure projects going forward, but I think this one has some work and some more coordination to do. Thank you. P14-2

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Response to Comment P14-1

The comment expresses concerns about coordination with the Proposition O-funded improvement of Machado Lake and Wilmington Drain.

The Machado Lake Ecosystem Rehabilitation Project and the Wilmington Drain Multi-Use Project are scheduled to be completed before tunnel construction would commence. As described in the Preliminary Screening Analysis for the Clearwater Program (Appendix 1-A of the draft EIR/EIS), the onshore tunnel alignments would be constructed more than 70 feet below ground surface, sometimes as deep as 450 feet. Under Alternative 4 (the recommended alternative), the tunnel would be constructed at a depth of approximately 80 feet beneath Ken Malloy Harbor Regional Park. Therefore, the tunnel for Alternative 4 (the recommended alternative) would not have an impact on the Machado Lake/Wilmington Drain project.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P14-2

The comment expresses concerns about the potential for vibrations from tunnel construction of Alternative 4 (the recommended alternative) to have an impact on the two large butane storage tanks at the Rancho Liquefied Petroleum Gas (LPG) facility.

Alternative 4 (the recommended alternative) would traverse under Gaffey Street between Anaheim Street and Capitol Drive. The two large Rancho LPG butane storage tanks are approximately 600 feet east of the recommended tunnel alignment (Alternative 4). At this location, the tunnel invert would be approximately 100 feet below the ground surface. Section 14.4.1.4 of the draft EIR/EIS specifically analyzed potential groundborne vibrations associated with tunnel construction and concluded that vibrations would not be perceivable beyond a distance of 110 feet through the soil. Furthermore, implementation of Mitigation Measure (MM) NOI-2a (rail maintenance plan) and MM NOI-2b (vibration control plan) would reduce vibration impacts to less than significant. Therefore, given the tunnel location and depth relative to the two large butane storage tanks, vibrations from tunnel construction would not affect the Rancho LPG facility.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P15: Jody James – Resident

Commenter P15

CLEARWATER
Program

Public Hearing for Draft EIR/EIS
COMMENT FORM

This form is provided as a convenience and is not required. Your comments may be submitted at any time during the public comment period, which ends on April 10, 2012.

Name: Jody James

Organization: (Private Citizen

Mailing Address: 1068 Via Cordova

City: San Pedro State: CA Zip: 90732

E-mail: Jody.James@sbcglobal.net

Regardless of which route this project takes our community is bearing an unfair and unmitigated burden. Give us reasonable mitigation - REMOVE the Rancho Butane/Propane Ultra Hazardous facility. - Eminent Domain for a public purpose - should be used to take this hazard away from our vulnerable Port and community. Use the site for a shaft (it's half way.) or base of operation, later for public parking - Special events, Soccer field. parking or "park and ride." P15-1

I would like to receive future public notices regarding the project via: ☒ E-mail ☐ Regular Mail

You may hand in this form during the public hearing or mail/e-mail it to:

Steven Highter, P.E.
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601
shighter@lacsd.org

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
U.S. Army Corps of Engineers,
Los Angeles District Regulatory Branch
915 Wilshire Boulevard
Los Angeles, CA 90017
Aaron.O.Allen@usace.army.mil

REC'D LACSD MAR 13 '12 AM 9:47 DOC # 485576 Highter S

Response to Comment P15-1

The comment is concerned that construction of Alternative 4 (the recommended alternative) would unfairly burden the San Pedro community. The comment also suggests removing the Rancho Liquefied Petroleum Gas (LPG) facility through eminent domain as mitigation for the project, and using the property for a shaft site, an operational base, public parking, special events, or a soccer field.

The Clearwater Program focuses on the Joint Outfall System (JOS), which serves portions of the city of Los Angeles, including areas in the vicinity of the San Pedro community as shown on Figure 7-9 of the draft Master Facilities Plan (MFP). Alternative 4 (the recommended alternative) would regionally benefit the entire JOS by providing for reliable Joint Water Pollution Control Plant (JWPCP) effluent management and would locally benefit the San Pedro community by reducing the potential of having to bypass JWPCP effluent flow into the Wilmington Drain. As described in the draft EIR/EIS, most of the construction-related project impacts would occur at the JWPCP West shaft site, which is located on the border between the city of Los Angeles and city of Carson. The majority of the residences and businesses in the immediate vicinity of the JWPCP West shaft site are within the JOS service area. Additionally, the residents of the South Shores area of San Pedro would benefit from the project because they are within the Sanitation Districts of Los Angeles County's (Sanitation Districts') service area for wastewater treatment.

Alternative 4 (the recommended alternative) would avoid marine environment impacts associated with constructing a new riser/diffuser and would minimize truck trips and air emissions due to its shorter tunnel length. Conversely, Alternatives 1, 2, and 3 would result in greater impacts on the marine environment due to new riser/diffuser construction and significantly more air emissions and truck trips due to their longer tunnel lengths. Based on the overall environmental analysis, it was concluded that Alternative 4 (the recommended alternative) is the environmentally preferred and superior alternative.

Alternative 4 (the recommended alternative) would traverse under Gaffey Street between Anaheim Street and Capitol Drive. The two large Rancho LPG butane storage tanks are approximately 600 feet east of the recommended tunnel alignment. At this location, the tunnel invert would be approximately 100 feet below the ground surface. Therefore, given the tunnel location and depth, construction and operation of the tunnel would not have an impact on the Rancho LPG facility, and an upset at the Rancho LPG facility would not have an impact on the tunnel.

Title 7 of the California Code of Civil Procedure contains laws regarding the circumstances by which public agencies can use eminent domain to acquire private property for projects that benefit the public, such as schools, roads, and police and fire stations. Eminent domain is the last measure a public agency can use to acquire private property, but the agency must first attempt to purchase the land by performing "good faith negotiations" with the property owner. The purchase price is usually set by the fair market value based on an appraisal. If the negotiations fail, then the public agency must file a Resolution of Necessity clearly stating why acquiring the land is the only option available for the progression of the project. Because the Rancho LPG facility was never identified as an essential shaft site location in either the draft MFP or draft EIR/EIS, there is no basis for the Sanitation Districts to modify Alternative 4 (the recommended alternative) and to claim acquisition of the property as a necessary element for the completion of the project.

Additionally, both the California Environmental Quality Act and National Environmental Policy Act require that there be a nexus between an impact and mitigation imposed on the project. That is, mitigation cannot be imposed that does not serve to avoid or reduce a specific impact. The only significant and unavoidable impacts that would result from Alternative 4 (those for which mitigation

cannot reduce the impacts to less than significant) would be those related to aesthetics, air quality, cultural resources, and greenhouse gases. None of these impacts would be reduced by the removal of the Rancho LPG facility. Therefore, removal of the Rancho LPG facility via eminent domain would not be appropriate mitigation.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P16: Rosellen Trunnel – Resident

Commenter P16

CLEARWATER Program

Public Hearing for Draft EIR/EIS

COMMENT FORM

This form is provided as a convenience and is not required. Your comments may be submitted at any time during the public comment period, which ends on April 10, 2012.

Name: Rosellen Trunnell

Organization:

Mailing Address: 1206 North Brett Place, Unit 212

City: San Pedro State: CA Zip: 90732-5043

E-mail:

This meeting was valuable, and I hope there will be more of this kind. P16-1

I would like to receive future public notices regarding the project via: ☐ E-mail ☐ Regular Mail

You may hand in this form during the public hearing or mail/e-mail it to:

Steven Highter, P.E.
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601
shighter@lacsd.org

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
U.S. Army Corps of Engineers,
Los Angeles District Regulatory Branch
915 Wilshire Boulevard
Los Angeles, CA 90017
Aaron.O.Allen@usace.army.mil

Response to Comment P16-1

The comment expresses appreciation for the public meeting on the draft EIR/EIS.

The Sanitation Districts of Los Angeles County and the U.S. Army Corps of Engineers appreciate the comment and agree that public outreach is essential to the planning process. However, the comment does not address the analysis in the EIR/EIS, so no response is necessary. The comment will be provided to the decision makers for their consideration.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P17: Robert Borden – Resident

Commenter P17

CLEARWATER Program

Public Hearing for Draft EIR/EIS

COMMENT FORM

This form is provided as a convenience and is not required. Your comments may be submitted at any time during the public comment period, which ends on April 10, 2012.

Name: Robert Borden

Organization: Resident

Mailing Address:

City: S.P. State: CA Zip: 90732

E-mail: Rborden959@cox.net

Geologic hazards is in 1300 feet in prime residential. This proposal is outrageous! Infrastructure yes, but please don't jeopardize our community P17-1

I would like to receive future public notices regarding the project via: ☒ E-mail ☐ Regular Mail

You may hand in this form during the public hearing or mail/e-mail it to:

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Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601
shighter@lacsd.org

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
U.S. Army Corps of Engineers,
Los Angeles District Regulatory Branch
915 Wilshire Boulevard
Los Angeles, CA 90017
Aaron.O.Allen@usace.army.mil

Response to Comment P17-1

The comment raises concerns about tunneling beneath residential areas where there may be geological instability.

Alternatives 1, 2, 3, and 4 would all require tunneling beneath residential areas; however, under each alternative, the tunnel would generally be aligned within public rights-of-way. As described in Section 8.4.1 of the draft EIR/EIS, geotechnical reports were prepared for the Sanitation Districts of Los Angeles County by Fugro West, and the resulting analyses and recommendations were evaluated in a feasibility report prepared by Parsons (see Chapter 25 of the draft EIR/EIS for references). The feasibility report considered potential geotechnical and seismic issues that could affect the design and construction of the facilities for the project alternatives. Geological impacts were analyzed in Chapter 8 of the draft EIR/EIS, and it was determined that with mitigation, all geological impacts would be less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P18: Pat Rome – Harbor Pine Creek Homeowners Association

Commenter P18

CLEARWATER Program

Public Hearing for Draft EIR/EIS

COMMENT FORM

This form is provided as a convenience and is not required. Your comments may be submitted at any time during the public comment period, which ends on April 10, 2012.

Name: PAT ROME –

Organization: HARBOR PINE CREEK H.O.A.

Mailing Address: 25327 PINE CREEK LANE

City: WILMINGTON State: CA Zip: 90744

E-mail: P.I.W rome@YAHOO.COM

ARE YOU COORDINATING WITH THE PROP "O" PEOPLE? THAT IS A MULTI MILLION DOLLAR PROJECT TO CLEAN UP MACHADO LAKE – P18-1

WHAT ABOUT THE GAS STORAGE TANKS ON GAFFEY? IF THERE ARE ALREADY LPG TANKS THAT ARE A DISASTER WAITING TO HAPPEN – HOW CAN YOU PROMISE THERE WILL BE NO PROBLEMS??? OUR PRIORITIES MUST BE SAFETY – HOW CLOSE IS THIS PLAN TO FRACKING – P18-2 P18-3

I would like to receive future public notices regarding the project via: ☑ E-mail ☒ Regular Mail

You may hand in this form during the public hearing or mail/e-mail it to:

Steven Highter, P.E.
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601
shighter@lacsd.org

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
U.S. Army Corps of Engineers,
Los Angeles District Regulatory Branch
915 Wilshire Boulevard
Los Angeles, CA 90017
Aaron.O.Allen@usace.army.mil

Response to Comment P18-1

The comment expresses concerns about coordination with the Proposition O-funded improvement of Machado Lake and Wilmington Drain.

The Machado Lake Ecosystem Rehabilitation Project and the Wilmington Drain Multi-Use Project are scheduled to be completed before tunnel construction would commence. As described in the Preliminary Screening Analysis for the Clearwater Program (Appendix 1-A of the draft EIR/EIS), the onshore tunnel alignments would be constructed more than 70 feet below ground surface, sometimes as deep as 450 feet. Under Alternative 4 (the recommended alternative), the tunnel would be constructed at a depth of approximately 80 feet beneath Ken Malloy Harbor Regional Park. Therefore, the tunnel for Alternative 4 would not have an impact on the Machado Lake/Wilmington Drain project.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P18-2

The comment expresses concern about potential impacts associated with the Rancho Liquefied Petroleum Gas (LPG) facility on Gaffey Street.

Alternative 4 (the recommended alternative), would traverse under Gaffey Street between Anaheim Street and Capitol Drive. The two large Rancho LPG butane storage tanks are approximately 600 feet east of the recommended tunnel alignment. At this location, the tunnel invert would be approximately 100 feet below the ground surface. Therefore, given the tunnel location and depth, construction and operation of the tunnel would not have an impact on the Rancho LPG facility, and an upset at the Rancho LPG facility would not have an impact on the tunnel.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P18-3

The comment asks if the project is similar to “fracking.”

Hydraulic fracturing, which is commonly referred to as “fracking,” is a method used by the petroleum and gas industry to extract oil or natural gas from geological formations deep underground. The extraction wells can be located miles below the ground surface. Water or slurry is injected into the bottom of the well at very high pressures to break, or fracture, rock that contains oil or gas. The oil or gas is then collected in the well after it is released from the geological formation.

The proposed project would not involve hydraulic fracturing, nor is it similar. A tunnel boring machine (TBM) would be used to construct the tunnel. High-pressure water or slurry would not be used to break up the ground in front of the TBM.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P19: Katy Watkins – Resident

Commenter P19

CLEARWATER Program

Public Hearing for Draft EIR/EIS

COMMENT FORM

This form is provided as a convenience and is not required. Your comments may be submitted at any time during the public comment period, which ends on April 10, 2012.

Name: KATY WATKINS

Organization: CITIZEN / RESIDENT

Mailing Address: 26101 S. VERMONT AVE #201

City: HARBOR CITY State: CA Zip: 90710

E-mail: KATYW@PACBELL.NET

ARE YOU AWARE OF THE PROP O PROJECT AT LAKE MACHADA? WHAT ARE YOU DOING TO COORDINATE WITH THAT PROJECT? WHAT IMPACT WILL YOUR PROJECT HAVE ON THE PROP O PROJECT. WHAT ABOUT THE PURPORTED UNSTABLE LPG TANKS AT GAFFEY AND PALOS VERDES DRIVE NORTH? ANAHEIM

P19-1

P19-2

I would like to receive future public notices regarding the project via: ☒ E-mail ☐ Regular Mail

You may hand in this form during the public hearing or mail/e-mail it to:

Steven Highter, P.E.
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601
shighter@lacsd.org

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
U.S. Army Corps of Engineers,
Los Angeles District Regulatory Branch
915 Wilshire Boulevard
Los Angeles, CA 90017
Aaron.O.Allen@usace.army.mil

Response to Comment P19-1

The comment expresses concerns about coordination with the Proposition O-funded improvement of Machado Lake and Wilmington Drain.

The Machado Lake Ecosystem Rehabilitation Project and the Wilmington Drain Multi-Use Project are scheduled to be completed before tunnel construction would commence. As described in the Preliminary Screening Analysis for the Clearwater Program (Appendix 1-A of the draft EIR/EIS), the onshore tunnel alignments would be constructed more than 70 feet below ground surface, sometimes as deep as 450 feet. Under Alternative 4 (the recommended alternative), the tunnel would be constructed at a depth of approximately 80 feet beneath Ken Malloy Harbor Regional Park. Therefore, the tunnel for Alternative 4 would not have an impact on the Machado Lake/Wilmington Drain project.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P19-2

The comment expresses concern about potential impacts associated with the Rancho Liquefied Petroleum Gas (LPG) facility on Gaffey Street.

Alternative 4 (the recommended alternative), would traverse under Gaffey Street between Anaheim Street and Capitol Drive. The two large Rancho LPG butane storage tanks are approximately 600 feet east of the recommended tunnel alignment. At this location, the tunnel invert would be approximately 100 feet below the ground surface. Therefore, given the tunnel location and depth, construction and operation of the tunnel would not have an impact on the Rancho LPG facility, and an upset at the Rancho LPG facility would not have an impact on the tunnel.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P20: JoAnn Wysocki – Resident

Commenter P20

CLEARWATER
Program

Public Hearing for Draft EIR/EIS
COMMENT FORM I

This form is provided as a convenience and is not required. Your comments may be submitted at any time during the public comment period, which ends on April 10, 2012.

Name: JoAnn Wysocki

Organization: Resident

Mailing Address: 1006 King Avenue

City: Wilmington State: CA Zip: 90744-3204

E-mail: F18-B Levels of Service Intersection Turning Movement
City of Wilmington
Gaffey St - 110 Ramp
Gaffey St - 9th Street
Gaffey St - Paseo del Mar
Weskm - Paseo del Mar
Western - 9th Street
① Should be corrected to community of San Pedro. P20-1
② Wilmington is a community not a city.

II no response from Los Angeles Police Department on primary response time (2175 John S. Gibson Blvd) to Angel's Gate on Royal Palm. Page 16-9 P20-2
① L.A.P.D. should respond in final EIR.

I would like to receive future public notices regarding the project via: ☐ E-mail ☒ Regular Mail

You may hand in this form during the public hearing or mail/e-mail it to:

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Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601
shighter@lacsd.org

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
U.S. Army Corps of Engineers,
Los Angeles District Regulatory Branch
915 Wilshire Boulevard
Los Angeles, CA 90017
Aaron.O.Allen@usace.army.mil

CLEARWATER
Program

Public Hearing for Draft EIR/EIS

COMMENT FORM II

This form is provided as a convenience and is not required. Your comments may be submitted at any time during the public comment period, which ends on April 10, 2012.

Name: JoANN WYSOCKI

Organization: RESIDENT

Mailing Address: 1006 KING AVENUE

City: WILMINGTON State: CA Zip: 90744-3204

E-mail: none

III This E.I.R. should be any opportunity for anyone who has new ~~uses~~ suggestions for new new uses of reclaimed water P20-3

IV Need additional information in final E.I.R Project put out to bid process: cost overruns: street sweeping: telephone contacts: removal of grafitti in a timely matter PAGE 15-38. P20-4

V Will the final E.I.R. be sent to the San Pedro Regional, Carson Regional and Wilmington Branch Libraries? P20-5

I would like to receive future public notices regarding the project via: ☐ E-mail ☒ Regular Mail

You may hand in this form during the public hearing or mail/e-mail it to:

Steven Highter, P.E.
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601
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Aaron O. Allen, Ph.D.
Chief, North Coast Branch
U.S. Army Corps of Engineers,
Los Angeles District Regulatory Branch
915 Wilshire Boulevard
Los Angeles, CA 90017
Aaron.O.Allen@usace.army.mil

Response to Comment P20-1

The comment addresses the Existing (2010) Level of Service Worksheets found in Appendix 18-B of the draft EIR/EIS. The comment states that the city is incorrectly labeled on some of the worksheets.

These forms were used during analysis by the traffic consultant. Some of these forms include a field for the city in which the intersection is located. Although these intersections are actually within the jurisdiction of the city of Los Angeles, the traffic consultant used San Pedro or Wilmington to provide context for analysis purposes. This identification does not affect the accuracy of the analysis because the jurisdictional information is not relevant to the analysis.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P20-2

The comment expresses disappointment in the fact that the Los Angeles Police Department did not provide information about the response times for the Angels Gate and Royal Palms shaft sites.

The information was requested, and neither the Sanitation Districts of Los Angeles County (Sanitation Districts) nor the U.S. Army Corps of Engineers (Corps) has the means to compel the police department to provide the information.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P20-3

The comment suggests that the Clearwater Program EIR/EIS should be an opportunity for people to provide new suggestions for the uses of recycled water.

As described in Appendix 1-B of the draft EIR/EIS, since 2006, the Sanitation Districts conducted over 500 public outreach meetings with public officials; civic and community groups; businesses; environmental organizations; news media; and various local, state, and federal agencies. This effort facilitated a productive exchange of information and ideas between the Sanitation Districts and stakeholders regarding all components of the Clearwater Program, including reuse opportunities for recycled water.

The Sanitation Districts and Corps recognize that recycled water is an essential regional resource, which is why one of the four primary objectives of the Clearwater Program is to "provide support for emerging recycled water reuse…opportunities." As described in Chapter 1 of the draft Master Facilities Plan, the Sanitation Districts have pioneered water reclamation and reuse in Southern California, beginning with the completion of the Whittier Narrows Water Reclamation Plant in 1962. The Sanitation Districts now own and operate 10 water reclamation plants (WRPs) that produce approximately 165 million gallons per day of high-quality recycled water. Approximately half of the recycled water is reused at over 640 sites throughout Los Angeles County for groundwater replenishment; industrial, commercial, and recreational applications; habitat maintenance; and agricultural and landscape irrigation. This message has been and will continue to be an important component of the Sanitation Districts' public outreach and education efforts.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P20-4

The comment requests additional information about the bid process, cost overruns, street sweeping, telephone contacts, and graffiti removal.

The project would be competitively bid upon completion of final design. The Sanitation Districts would award the project to the lowest qualified bid for each construction contract.

A contingency consistent with industry standards for a project of this size was applied to the cost estimate to account for possible overruns.

It is the Sanitation Districts' standard practice to require contractors have a motor sweeper on the job site at all times to keep paved areas acceptably clean wherever construction is occurring. In addition, implementing South Coast Air Quality Management District Rule 403 would reduce dust emanating from the job site because watering would occur at least three times a day. As part of the community outreach, a contact number would be established to provide people with a means to express their concerns during construction.

It is also the Sanitation Districts' standard practice to require contractors remove graffiti within 24 hours of notification. Implementation of Mitigation Measure (MM) AES-1 (same as MM AES-3a), as described in the draft EIR/EIS, would ensure maintenance of the aesthetic treatments by removing graffiti in a timely manner.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P20-5

The comment asks if the final EIR/EIS will be available in the local libraries.

The final EIR/EIS will be available in hard copy format at the Carson Regional Library, the Los Angeles Public Libraries' San Pedro and Wilmington Branches, and the Sanitation Districts' headquarters near the city of Whittier. In addition, the EIR/EIS can be accessed electronically on the Sanitation Districts' website, the Clearwater Program website, or compact disc.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P21: Robert Stevens – Resident

Commenter P21

Highter, Steve

From: Kim Stevens <stevens@his.com>
Sent: Friday, March 09, 2012 4:54 PM
To: Highter, Steve
Subject: Clearwater Program

Dear Sirs,

As a nearby resident in the Palisades, I would like to make a comment on the Clearwater Program.

This is a NIMBY issue par excellence, but we all know it has to be done and that the White Point site is the logical place from which to do it.

My concern is that, as you know, there was a recent landslide on the Paseo del Mar between the Palisades and White Point, which has cut the Paseo del Mar. P21-1

As your described access site is down the hill at White Point, all of the detritus removed will have to be moved uphill. The existing road up the hill was not designed for heavy traffic, and I fear that its use by hundreds of heavy trucks will destabilize the cliff at White Point also. Would it be possible to move the dirt and stone up the hill on a conveyor belt, and have the trucks load at the top of the hill rather than at the excavation site itself?

Regards,

Robert K. Stevens
3612 S Walker Ave.
San Pedro 90731
310-514-8369

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Response to Comment P21-1

The comment requests alternative dirt removal methods be investigated at the Royal Palms shaft site due to the number of trucks traversing the existing access road and the potential of those trucks to affect the stability of the cliff.

As described in Chapter 8 of the draft EIR/EIS, implementation of Mitigation Measure GEO-1 at the Royal Palms shaft site, which involves performing a detailed geotechnical investigation and incorporating site-specific recommendations into the final design of the project, would reduce impacts to less than significant. The detailed investigation would address issues such as landslide potential, slope stability, and ground failure.

Removal of excavated materials from the construction site will be investigated during final design. Utilization of conveyor belts will be included in the analyses.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P22: Laureen Vivian – Resident

Commenter P22

Highter, Steve

From: Laureen Claire Vivian <lvivian@earthlink.net>
Sent: Saturday, March 10, 2012 2:57 PM
To: Highter, Steve
Cc: joebuscaino@cox.net; diananave@earthlink.net; johnmmavar@gmail.com
Subject: Clearwater

March 10, 2012

Dear Steven Highter,

I am very concerned about the impact of the Clearwater Program on our community of San Pedro. I have served on the NW Neighborhood Council Board for 4 years and on the CAC/CRA Board for 3 1/2 and have spear-headed and shepherded the $682,000 Averill Park Stream renovation project. My concern for the community and our quality of life runs deep.

Over the short course of our awarness of your proposed project, the process of alternative studies and their presentation has been minimal to us. And now, the "preferred alternative", so deemed by your department and without the people of San Pedro having any say in the matter, is the one that rams through the upper spine of our town. We would like to have a meeting with you and ask you to present to our three (3) neighborhood councils as a matter of due diligence and transperancey. We believe that the citizens of our town should be made fully aware of the alternatives and their respective impact. P22-1

Moreover, the preferred alternative you have seemed to have chosen is not our preferred alternative. The negative impacts of traffic, noise, ,pollution, disruption of existing natural features at Royal Palms (even "just" temporarily) are extensive. P22-2

With the Port's waterfront projects the alternative that parallels this disruption and improvement is the more logical and least damaging to our town. The outfall is a bit further yet the benefits to us as a town and people far outweighs this added effort.

Please let me know if you would be willing to present to our local Neighborhood Councils, write in our local papers and/or hold special "town hall" meetings to allow for the best plan to be decided communally and transparently. P22-3

Thank you for your consideration and I look forward to hearing from you.

Laureen Vivian, MA

Laureen Vivian & Associates

445 West 6th Street

San Pedro, CA 90731

www.LaureenVivian.com

1

Response to Comment P22-1

The comment requests that the Sanitation Districts of Los Angeles County (Sanitation Districts) meet with three San Pedro neighborhood councils to fully inform the community about potential project impacts.

The Sanitation Districts and U.S. Army Corps of Engineers (Corps) agree that public outreach and transparency are critical to the success of the Clearwater Program planning effort. Appendix 1-B of the draft EIR/EIS included a comprehensive agency and public scoping report. Since 2006, the Sanitation Districts have conducted over 500 outreach and coordination meetings with public officials; civic and community groups; businesses; environmental organizations; news media; and various local, state, and federal agencies. At the onset of the planning effort, a project website (www.ClearwaterProgram.com) and an information hotline (877-300-WATER) were established. In addition, three newsletters were circulated in the project area to keep the public and interested parties apprised of progress being made during the planning process. The mailing list for the third newsletter included every parcel along each the final four tunnel alignment alternatives.

In March 2008, at the inception of the alternatives analysis process and long before any decisions were made, the Sanitation Districts conducted a series of public workshops in San Pedro, Carson, Wilmington, and Rancho Palos Verdes. Also, in October and November 2008, public scoping meetings to inform the preparation of the draft EIR/EIS were held in San Pedro, Carson, Wilmington, and Whittier. Public hearings on the draft EIR/EIS were conducted in San Pedro, Carson, and Whittier in March 2012. All of these public workshops and hearings were advertised in several newspapers including the Daily Breeze, Press Telegram, Random Lengths, Beach Reporter, Peninsula News, Impacto, La Opinion, Wave Pub West Edition, Inland Valley Daily Bulletin, and San Gabriel Valley newspapers.

The Clearwater Program outreach efforts included the three neighborhood councils in San Pedro. Specifically, the Sanitation Districts met with the full Coastal San Pedro Neighborhood Council in August 2008 and July 2011, the full Central San Pedro Neighborhood Council in July 2011, the President of the Northwest San Pedro Neighborhood Council in January 2007, the full Northwest San Pedro Neighborhood Council in July 2011, and the Port Committee of the Northwest San Pedro Neighborhood Council in August 2011.

Overall, this comprehensive outreach program greatly exceeded the public noticing, disclosure, and scoping requirements and recommendations of the California Environmental Quality Act and the National Environmental Policy Act.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P22-2

The comment suggests that an alternative route through the Port of Los Angeles would cause fewer environmental impacts in the Royal Palms area, be more logical because of disruptive impacts from existing port projects, and result in benefits that outweigh the added costs.

Chapter 22 of the draft EIR/EIS compared the environmental impacts of each of the project alternatives and concluded that Alternative 4 (the recommended alternative) would result in less environmental impacts than the other three project alternatives, including Alternatives 1 and 2, which are aligned through the Port of Los Angeles. Chapter 21 of the draft EIR/EIS provided cumulative impact analysis, which specifically included the San Pedro and Wilmington Waterfront Projects and identified potential

environmental impacts for each resource area. Chapter 6 of the draft Master Facilities Plan, as summarized in Chapter 3 of the draft EIR/EIS, presented an alternatives analysis process that systematically applied multiple screening criteria (e.g., public input, cost effectiveness, long-term uncertainty, operational considerations, constructability, and environmental impacts) to establish a reasonable range of alternatives, including the highest-ranked recommended alternative, that feasibly met the project objectives. Alternative 4 (the recommended alternative) would avoid marine environment impacts associated with constructing a new riser/diffuser and would minimize truck trips and air emissions due to its shorter tunnel length. Conversely, Alternatives 1 and 2 would result in greater impacts on the marine environment due to new riser/diffuser construction and significantly more air emissions and truck trips due to their longer tunnel lengths. Based on the overall environmental analysis, it was concluded that Alternative 4 (the recommended alternative) is the environmentally preferred and superior alternative.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P22-3

The comment requests additional public outreach to allow for the best plan to be decided communally and transparently.

As discussed in Response to Comment P22-1, the Sanitation Districts conducted an extensive public outreach effort in support of the planning phase of the Clearwater Program that included meetings with the three San Pedro neighborhood councils. The valuable input received was used to evaluate the project alternatives and determine the recommended alternative. On March 14, 2012, in response to this comment, the Sanitation Districts sent an email to the commenter offering to meet again with the three neighborhood councils in San Pedro; however, the commenter did not respond.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P23: Jody James – Resident

Commenter P23

Highter, Steve

From: Jody James <jody.james@sbcglobal.net>
Sent: Sunday, March 11, 2012 10:49 PM
To: Highter, Steve
Cc: mrenvirlaw@sbcglobal.net; Janet Gunter
Subject: Clearwater/mitigation

Greetings Mr. Highter,

I am writing my short comments on the Clearwater Program.
Regardless whichever tunneling route is taken - hopefully the geologic information is as accurate as possible - our Harbor Communities are bearing a disproportionate burden for the benefit of wider areas of LA County. P23-1

I am asking for "mitigation" that would be a benefit in a substantial way. The "preferred" route of your tunneling travels under Gaffey Street and takes a westward turn almost directly under the large Rancho LPG - Butane and Propane storage facility. This facility meets all the legal definitions of an Ultra Hazardous Activity. The site is in LA City Planning documents (you have seen these) clearly identified as in the Rupture Zone of the Palos Verdes Fault. I also see that this location on the "preferred" route is approximately half way along the route. This might be a useful site for a shaft or base of operations for this project. P23-2

More importantly, for **PUBLIC SAFETY** and justifiable **MITIGATION** it would be admirable to remove this "hazard". Perhaps Eminent Domain action for public use of this land should be utilized. When the Clearwater Project is complete it could be used as a park-and-ride, parking lot for the Field of Dreams Soccer Field, and/or special events at the Port of LA. A railroad spur exists that could be useful without much imagination. Thank you, Jody James

Response to Comment P23-1

The comment states that the harbor communities are bearing a disproportionate burden for the benefit of wider areas in Los Angeles County.

The Clearwater Program focuses on the Joint Outfall System (JOS), which serves portions of the city of Los Angeles, including areas in the vicinity of the harbor communities, as shown on Figure 7-9 of the draft Master Facilities Plan (MFP). Alternative 4 (the recommended alternative) would regionally benefit the entire JOS by providing for reliable Joint Water Pollution Control Plant (JWPCP) effluent management and would locally benefit the harbor communities by reducing the potential of having to bypass JWPCP effluent flow into the Wilmington Drain. As described in the draft EIR/EIS, most of the construction-related project impacts would occur at the JWPCP West shaft site, which is located on the border between the city of Los Angeles and city of Carson. The majority of the residences and businesses in the immediate vicinity of the JWPCP West shaft site are within the JOS service area. Additionally, the residents of the South Shores area of San Pedro would benefit from the project because they are within the Sanitation Districts of Los Angeles County's (Sanitation Districts') service area for wastewater treatment.

Alternative 4 (the recommended alternative) would avoid marine environment impacts associated with constructing a new riser/diffuser and would minimize truck trips and air emissions due to its shorter tunnel length. Conversely, Alternatives 1, 2, and 3 would result in greater impacts on the marine environment due to new riser/diffuser construction and significantly more air emissions and truck trips due to their longer tunnel lengths. Based on the overall environmental analysis, it was concluded that Alternative 4 (the recommended alternative) is the environmentally preferred and superior alternative.

No revisions to the draft EIR/EIS are required in response to this comment

Response to Comment P23-2

The comment encourages removal of the Rancho Liquefied Petroleum Gas (LPG) facility through eminent domain as mitigation for the project, using the property as a shaft site or base of operations, and later a park-and-ride, parking lot, soccer field, or special events facility.

Alternative 4 (the recommended alternative) would traverse under Gaffey Street between Anaheim Street and Capitol Drive. The two large Rancho LPG butane storage tanks are approximately 600 feet east of the recommended tunnel alignment. At this location, the tunnel invert would be approximately 100 feet below the ground surface. Therefore, given the tunnel location and depth, construction and operation of the tunnel would not have an impact on the Rancho LPG facility, and an upset at the Rancho LPG facility would not have an impact on the tunnel.

Title 7 of the California Code of Civil Procedure contains laws regarding the circumstances by which public agencies can use eminent domain to acquire private property for projects that benefit the public, such as schools, roads, and police and fire stations. Eminent domain is the last measure a public agency can use to acquire private property, but the agency must first attempt to purchase the land by performing "good faith negotiations" with the property owner. The purchase price is usually set by the fair market value based on an appraisal. If the negotiations fail, then the public agency must file a Resolution of Necessity clearly stating why acquiring the land is the only option available for the progression of the project. Because the Rancho LPG facility was never identified as an essential shaft site location in either the draft MFP or draft EIR/EIS, there is no basis for the Sanitation Districts to modify Alternative 4 (the

recommended alternative) and to claim acquisition of the property as a necessary element for the completion of the project.

Additionally, both the California Environmental Quality Act and National Environmental Policy Act require that there be a nexus between an impact and mitigation imposed on the project. That is, mitigation cannot be imposed that does not serve to avoid or reduce a specific impact. The only significant and unavoidable impacts that would result from Alternative 4 (those for which mitigation cannot reduce the impacts to less than significant) would be those related to aesthetics, air quality, cultural resources, and greenhouse gases. None of these impacts would be reduced by the removal of the Rancho LPG facility. Therefore, removal of the Rancho LPG facility via eminent domain would not be appropriate mitigation.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P24: Kiran Magiawala – Resident

Commenter P-24

Highter, Steve

From: Kiran Magiawala <kiran_magiawala@yahoo.com>
Sent: Thursday, March 22, 2012 12:55 PM
To: Highter, Steve; Giljum, Mark; Acosta, Glenn; Haug, David; Avila, Don
Cc: James Stahl
Subject: Climate Change Alters the Calculus for Water Infrastructure Planning

Greetings.

FYI. Will the sea level rise due to climate change be integrated into discharge duct elevation planning/pumping requirements for our ClearWater program? Just curious. P24-1

Thanks and regards.

Kiran.

http://www.circleofblue.org/waternews/2012/world/climate-change-alters-the-calculus-for-water-infrastructure-planning/

Kiran R. Magiawala PhD
Retired Engineer, Citizen Scientist and Volunteer
Tele: 310-978-1434
Email: kiran_magiawala@yahoo.com

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Response to Comment P24-1

The comment asks if sea-level rise would affect pumping requirements for future ocean discharge.

The potential for rising sea levels would be integrated into the design of the new facilities. Any future effluent pumping plant improvements at the Joint Water Pollution Control Plant would need to account for the effects of sea-level rise on the performance of the pumps.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P25: Jeanne Lacombe – Resident

Commenter P25

Highter, Steve

From: Lacombe <chateau4us@att.net>
Sent: Friday, March 23, 2012 3:35 PM
To: Highter, Steve
Subject: Clearwater project

Hi Mr. Highter,

I met you last year when you spoke to our HOA regarding the Clearwater project. I recently received the latest packet of information and noticed that the new proposed line will run under the Rancho LPG facility at 2110 N. Gaffey in San Pedro.

This concerns me because there is 25 million gallons of butane and propane stored at this facility. The local residents have been opposed to this facility since it was built in 1973 without permits. Our homes, schools and businesses were there prior to 1973 but the tanks were built anyway. In 1978 legislation was passed due to this facility to prevent any future facility from being built like this one was. I'm part of the group that is trying to relocate these tanks to a safer location. I found out according to LACity planning that the parcel is on an earthquake fault, landslide, liquefaction and methane zone.

P25-1

Since the local residents oppose the tanks and local politicians also oppose it (but can't do anything because it's grandfathered in) I'm sure you can get lots of support to push for eminent domain on this facility because it would be for the public good and benefit. The public needs to be able to flush our toilets but we don't need 25 million gallons of propane there.

Rancho purchased the property in 2010 for $19 million dollars. There shouldn't be the added expense of the business side of the transaction since they would get to keep and take the product and equipment. Then the Sanitation District can use that parcel as a shaft side, equipment storage or whatever.

I have a great relationship with RPV city council, planning dept and city staff. If I can be of any assistance to help provide documentation or contact information, please let me know.

Thanks for your time,
Jeanne Lacombe
(310) 833-0444

Response to Comment P25-1

The comment states that Alternative 4 (the recommended alternative) would pass under the Rancho Liquefied Petroleum Gas (LPG) facility and encourages the removal of the facility through eminent domain as mitigation for the project. The comment recommends using the property as a shaft site or for equipment storage.

Alternative 4 (the recommended alternative) would traverse under Gaffey Street between Anaheim Street and Capitol Drive. The two large Rancho LPG butane storage tanks are approximately 600 feet east of the recommended tunnel alignment. At this location, the tunnel invert would be approximately 100 feet below the ground surface. Therefore, given the tunnel location and depth, construction and operation of the tunnel would not have an impact on the Rancho LPG facility, and an upset at the Rancho LPG facility would not have an impact on the tunnel.

Title 7 of the California Code of Civil Procedure contains laws regarding the circumstances by which public agencies can use eminent domain to acquire private property for projects that benefit the public, such as schools, roads, and police and fire stations. Eminent domain is the last measure a public agency can use to acquire private property, but the agency must first attempt to purchase the land by performing "good faith negotiations" with the property owner. The purchase price is usually set by the fair market value based on an appraisal. If the negotiations fail, then the public agency must file a Resolution of Necessity clearly stating why acquiring the land is the only option available for the progression of the project. Because the Rancho LPG facility was never identified as an essential shaft site location in either the draft Master Facilities Plan or draft EIR/EIS, there is no basis for the Sanitation Districts of Los Angeles County to modify Alternative 4 (the recommended alternative) and to claim acquisition of the property as a necessary element for the completion of the project.

Additionally, both the California Environmental Quality Act and National Environmental Policy Act require that there be a nexus between an impact and mitigation imposed on the project. That is, mitigation cannot be imposed that does not serve to avoid or reduce a specific impact. The only significant and unavoidable impacts that would result from Alternative 4 (those for which mitigation cannot reduce the impacts to less than significant) would be those related to aesthetics, air quality, cultural resources, and greenhouse gases. None of these impacts would be reduced by the removal of the Rancho LPG facility. Therefore, removal of the Rancho LPG facility via eminent domain would not be appropriate mitigation.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P26: Heal the Bay – W. Susie Santilena, Environmental Engineer

Commenter P26

Highter, Steve

From: Susie Santilena <ssantilena@healthebay.org>
Sent: Wednesday, April 04, 2012 2:47 PM
To: Highter, Steve
Subject: Questions Regarding Clearwater Program DEIR

Hi, Steven.

I am reviewing the Clearwater Program DEIR on Heal the Bay's behalf and have a few questions.

Section 3.3.2.4- Will the preferred alternative also result in the dredging of ocean sediments? P26-1

Section 3.3.1.2- says JOS is expected to have a treatment capacity shortfall of around 20 MGD needed to accommodate future flows. It looks like by optimizing treatment plant operations in all of its plants, LACSD will be able to increase water reuse by anywhere from 16-47 MGD. Has there been any analysis to determine if LACSD could recycle its way out of needing to build a new tunnel altogether? If so, what were the results? Also, have you looked at upgrading treatment to level where JWPCPs effluent could be discharged to Wilmington Drain to allow for maintenance of the existing infrastructure? P26-2

Any input or documents you have that might help answer these questions would be greatly appreciated!

Thank you!

W. Susie Santilena | Environmental Engineer | Water Quality
Heal the Bay | 1444 9th Street | Santa Monica CA 90401
Tel: 310 451 1500 X189 | FAX: 310 496 1902 | ssantilena@healthebay.org
Protect what you love. Get involved, take action or join as a Heal the Bay member!

Response to Comment P26-1

The comment requests clarification on whether Alternative 4 (the recommended alternative) would include dredging of ocean sediments.

The only marine work proposed under Alternative 4 would be the rehabilitation of the existing ocean outfalls. As described in Section 7.2.5.4 of the draft Master Facilities Plant (MFP), Section 3.3.2.3 of the draft EIR/EIS, and the draft Executive Summary, rehabilitation of the existing ocean outfalls would include re-ballasting and joint repairs. Rehabilitation of the existing ocean outfalls would not require mechanical dredging or removal of large quantities of sediment. A small derrick barge would be used to place the ballast rock around the outfalls and to support the joint repair work. The re-ballasting work would occur on the existing 72-, 90-, and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A tube extending from the barge deck to the ocean floor would ensure that placement of ballast rock would not extend beyond the existing footprint. Joint repairs would require the temporary removal of sediment and ballast rock to fully expose the joint being repaired. A team of divers would remove the ballast rock and hand-shovel approximately 2 cubic yards of sediment from each joint. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. Cathodic protection would also be restored or added where necessary. It is estimated that approximately 10 to 40 joints would require repair, resulting in the hand removal of approximately 20 to 80 cubic yards of sediment. Therefore, because no mechanical dredging would be associated with Alternative 4 (the recommended alternative), the rehabilitation work would entail removal of *de minimis* quantities of sediment.

Section 3.3.2.3, under Existing Ocean Outfalls, second paragraph, is revised in the final EIR/EIS as follows:

> Alternatives 1 through 4 (Project) would include improvements to the existing ocean outfalls, such as joint repairs and re-ballasting. The re-ballasting work would occur on the existing 72-, 90- and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A small derrick barge would be used to place the ballast rock around the outfalls and support the joint repair work. Joint repairs would involve temporarily removing some of the existing ballast rock from around the outfall to fully expose the joint being repaired. A team of divers would repair an estimated 10 to 40 joints and hand-shovel approximately 2 cubic yards of sediment from each joint. Mechanical dredging would not be required. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. ~~c~~Cathodic protection would also be restored or added where necessary. The marine vessels required for this work are listed in Table 3-10. The majority of the construction work would be based on one 10-hour shift per day, 5 days per week. It is estimated that approximately eight to ten construction workers would be needed for the rehabilitation work. Joint repairs and transport of construction workers would require a work vessel and crew vessel operating one daily round-trip for approximately 1 month, which would most likely deploy from the Port of Los Angeles. All of the work including mobilization, construction, and demobilization would take approximately 9 months.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P26-2

The comment asks if the Sanitation Districts of Los Angeles County (Sanitation Districts) have analyzed the potential for increased reuse at all of the Joint Outfall System (JOS) treatment plants to obviate the need to build a new tunnel. The comment also asks if the Sanitation Districts have assessed the potential for discharge to the Wilmington Drain to allow for maintenance of the existing tunnels.

The Sanitation Districts recognize that recycled water is an essential regional resource, which is why one of the four primary objectives of the Clearwater Program is to "provide support for emerging recycled water reuse…opportunities." As described in Chapter 1 of the draft MFP, the Sanitation Districts have pioneered water reclamation and reuse in Southern California, beginning with the completion of the Whittier Narrows Water Reclamation Plant in 1962. The Sanitation Districts now own and operate 10 water reclamation plants (WRPs) that produce approximately 165 million gallons per day (MGD) of high-quality recycled water. Approximately half of the recycled water is reused at over 640 sites throughout Los Angeles County for groundwater replenishment; industrial, commercial, and recreational applications; habitat maintenance; and agricultural and landscape irrigation. The other (unused) half of the recycled water produced is currently wasted, and discharged to nearby receiving waters (i.e., rivers, creeks, and channels) that convey it to the ocean.

While efforts to increase reuse at the JOS WRPs through coordination with local water agencies and regulators are ongoing, the anticipated success of these efforts will have no bearing on the need to build a new effluent tunnel at the Joint Water Pollution Control Plant (JWPCP). The permitted capacity of the JWPCP would remain at 400 MGD, and the associated peak flows of 927 MGD would require an approximately 18-foot-diameter (internal) effluent tunnel. Therefore, even if the Sanitation Districts could achieve the goal of 100 percent reuse at the WRPs, there would not be a commensurate reduction in wastewater flow to the JWPCP; there would only be a reduction in what is currently discharged to the receiving waters by the WRPs.

Section 6.2.5.1 of the draft MFP, which provided an analysis of options and alternatives for WRP effluent management, determined that complete reuse at the upstream WRPs would not be feasible. The draft MFP also explored the possibility of providing advanced treatment (such as microfiltration/reverse osmosis, ultraviolet disinfection, and advanced oxidation) at the JWPCP. Specifically, Section 6.2.6 of the draft MFP analyzed the feasibility of diverting enough flow from the existing JWPCP ocean discharge system to allow for the inspection and repair of each of the existing tunnels (Option JE 4 Reduced Ocean Discharge). To accommodate reuse and storage of the required 200 MGD of diverted flow, advanced treatment would be necessary. This reduced ocean discharge option specifically contemplated diversion of this advanced-treated effluent to the Central, West Coast, and/or Main San Gabriel Basins for groundwater recharge (i.e., indirect potable reuse). However, the reduced ocean discharge option was determined to be not viable for reasons presented in Section 6.2.6.5 of the draft MFP and thus was not further evaluated in the draft EIR/EIS.

Alternatively, as suggested by this comment, the advanced-treated effluent under the reduced ocean discharge option could potentially be discharged to the Wilmington Drain. However, this discharge location shares many of the same concerns discussed in Section 6.2.6.5 of the draft MFP, including those relating to constructability, operational flexibility, reliability, and familiarity. Hydraulically separating the two existing tunnels while both are flowing full each day would be a complex undertaking. Only then could flow be diverted to one tunnel, with the balance of the flow being diverted to the advanced treatment facilities for discharge to the Wilmington Drain so that inspection/repair work could ensue in the other dewatered tunnel. Tunnel inspection/repair would need to occur during the dry season when flows are typically lower. However, there would always be the risk of a severe unseasonal storm event

that could overwhelm the advanced treatment facilities and thus require a portion of the secondary-treated JWPCP effluent to be diverted directly to the Wilmington Drain in violation of the JWPCP discharge permit. This option would also require the operation of a completely new and complex treatment system to enhance the JWPCP's effluent quality. Lack of familiarity and system complexity would reduce the options' overall operational reliability. And, even if all of these impediments could be overcome, it would be very difficult to implement this option within a reasonable timeframe (i.e., approximately 10 years).

A reduced ocean discharge option that relies on discharge to the Wilmington Drain raises other concerns beyond those discussed in Section 6.2.6.5 of the draft MFP. First, the Wilmington Drain flows directly into Machado Lake, which is currently slated for major restoration. The restoration project includes providing an average of 1 cubic feet per second (0.6 MGD) of recycled water from the Terminal Island WRP to supplement flow already provided by the Wilmington Drain. According to the project manager, the 200 MGD the Sanitation Districts would need to divert to the Wilmington Drain would far exceed the average daily flows for which the Machado Lake restoration project is being designed and could potentially result in adverse impacts. A flow of this magnitude would exceed the capacity of the low-flow outlets in the Machado Lake dam. Consequently, there would be permanent overflow of the dam during the summer, cutting the east side of the lake off from the west, thus restricting public access to the park facilities. The proposed lake edge planting and terrace, pedestrian bridge in the lower freshwater marsh, and pedestrian walkway could be affected as well. The trash net system operating in the Wilmington Drain could also be impacted, as could the ecosystem in the Wilmington Drain, which provides habitat for the protected least Bell's vireo (Ahmed pers. comm.). Second, the primary function of the Wilmington Drain is to provide flood control for the local area, and storm flows in the Wilmington Drain have historically reached or exceeded its capacity. For example, as a result of a 1995 storm event, the Wilmington Drain overflowed its concrete channel next to the JWPCP and came within inches of overflowing a berm located between the drain and the plant. Consequently, because of the potential for a significant storm event at any time during the year, the Sanitation Districts cannot reliably discharge any amount of JWPCP effluent to the Wilmington Drain. Third, discharge to the Wilmington Drain would require a significant investment in facility upgrades at the JWPCP. It is estimated that the required treatment and storage facilities would cost over $1 billion, and there are no confirmed local reuse opportunities to offset these costs through the sale of the recycled water.

Finally, the recommended alternative (Alternative 4) provides benefits that would not be realized under the reduced ocean discharge option. As discussed in Chapters 1 and 7 of the draft MFP and in Chapter 1 of the draft EIR/EIS, in addition to aging infrastructure concerns, the existing tunnels cross the active Palos Verdes Fault and cannot accommodate projected peak wastewater flows associated with major storm events. A new tunnel would be constructed to current seismic standards and would have a hydraulic capacity of approximately 1,080 MGD, which can accommodate the peak storm flows of 927 MGD projected for the year 2050. Therefore, the reduced ocean discharge option, with or without utilization of the Wilmington Drain as a discharge location, is not viable and was not further analyzed in the draft EIR/EIS as a feasible project alternative.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P27: John Winkler – Miraflores Home Owner Association

Commenter P27

CLEAR WATER PROJECT

Public Hearing for Draft EIR/EIS Comment Form

This is a proposal for the Sanitation Districts to give back to the community that will be impacted by the Clearwater program.

In the 1920's up to about 1933 there was a Hot Spring Resort at Royal Palms State Beach. This resort was located a short distance from where the current connecting outfall extends offshore. Since the Long Beach earthquake of 1933 cut off the flow of the natural sulfur hot springs, it is felt that this spring can be found again with new technology. The Royal Palms Resort would benefit the residents of the 73 cities and unincorporated Los Angeles County as an outdoor swimming pool. P27-1

In the past, the Sanitation Districts have been good neighbors in providing benefits in the immediate vicinity of the JWPCP. Since the Sanitation Districts have recently restored a 17-acre Bixby Marshland at the corner of Sepulveda and Figueroa as well as other neighborhood improvements, it is felt that the Sanitation Districts could also restore the White Point Hot Spring pool as a way of giving back to the community.

Over time, the ratepayers in the Sanitation District's JOS (Joint Outfall System) would pay off the loans and bonds of $550 million to 1.4 billion dollars through connection fees and annual service charges. It is the population growth that will drive up the cost of Sanitation fees and the current homeowners will have to pay more because of this factor. P27-2

A failure of any of the existing tunnels could affect Wilmington Drain, Machado Lake and the Los Angeles Harbor. With this in mind, the San Pedro community takes the risk without any compensation. P27-3

The Sanitation Districts will be putting the aliment on public right of way (streets) although there will most likely be subsurface easements for portions of the tunnel project. If easements are needed, the property owner would have to sell at market value. The Sanitation Districts would also need land for temporary occupational right of way. Property owners again would be in a situation of temporary occupation in which the projects construction would last for 7 years (2015 to 2022). P27-4

Senior Engineer David Haug says, "he wants to leave the community as good or better than when we arrived". It is hoped that this proposal is acted on so that White Point Hot Springs can once again be a destination and attraction like it once was. P27-5

John Winkler/ Jhwinkler@me.com

Miraflores Home Owner Association

925 Cara Place, San Pedro, CA 90731

John Winkler

REC'D LACSD
APR 9 '12 AM 10:29

DOC #

Lighter S

Response to Comment P27-1

The comment suggests that a former hot springs pool near White Point be restored as mitigation for the project impacts on the Royal Palms community. The comment points out that the Bixby Marshland was restored by the Sanitation Districts of Los Angeles County (Sanitation Districts) to mitigate impacts of another project.

Both the California Environmental Quality Act and the National Environmental Policy Act require that there be a nexus between the impacts of a project and the mitigation required to address these impacts. This means that mitigation measures must address specific impacts and seek to avoid, minimize, rectify, reduce, eliminate, or compensate for those specific impacts.

Mitigation was included in the draft EIR/EIS to address specific impacts at the Royal Palms shaft site and throughout the project area to reduce impacts to less than significant. Some impacts for Alternative 4 (the recommended alternative) were found to be significant and unavoidable, meaning that mitigation could not reduce the impacts to less than significant. These included exceeding an air quality threshold, generating greenhouse gases, causing adverse visual impacts on scenic vistas or scenic resources, degrading existing visual character or quality, and disturbing or destroying a unique paleontological resource. None of these impacts would be avoided, minimized, rectified, reduced, eliminated, or compensated for by restoring the hot springs pool near White Point because there is no nexus between the impacts and the proposed mitigation. Therefore, restoring the hot springs pool would not be appropriate mitigation.

The Sanitation Districts restored the Bixby Marshland to mitigate significant impacts of digester construction at the Joint Water Pollution Control Plant (JWPCP) on adjacent riparian and marsh habitats. Therefore, because of the strong nexus between the project impacts and the mitigation, restoring the Bixby Marshland at the JWPCP was appropriate mitigation.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P27-2

The comment suggests that current homeowners would be forced to pay higher sanitation fees even though cost increases can be attributed to future population growth.

As described in Section 7.4 of the draft Master Facilities Plan (MFP), the capital cost of the recommended alternative has been split into two subcategories: upgrade and expansion. Upgrade portions of the alternative would benefit existing users by addressing needed improvements or existing deficiencies without providing additional capacity. Expansion portions of the project would benefit new users by providing increased capacity to accommodate their discharge. Of the recommended alternative's $550,000,000 total estimated capital cost, $416,250,000 is attributable to upgrade and $133,750,000 is attributable to expansion. The existing users of the Joint Outfall System (JOS) would pay for the upgrade portion through an increase in their annual service charge, and new users would pay for the expansion portion through their connection fees. Therefore, current homeowners would not be paying for the proposed facilities necessary to accommodate future population growth.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P27-3

The comment states that the San Pedro community bears uncompensated risk of existing tunnel failure.

As described in Chapter 1 of the draft MFP and Chapters 1 and 3 of the draft EIR/EIS, if the existing tunnels were damaged or the capacity of the ocean discharge system was exceeded, treated effluent from the JWPCP would need to be bypassed into the Wilmington Drain, a stormwater channel that flows through Ken Malloy Harbor Regional Park and out to the Los Angeles Harbor. This concern would be avoided through the implementation of Alternative 4 (the recommended alternative), the cost of which would be borne by the JOS ratepayers, most of whom are located outside of the San Pedro community.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P27-4

The comment expresses concern that owners would have to sell their property if the Sanitation Districts need an easement or temporary occupational rights-of-way.

Easements and occupational rights-of-way are legal agreements between a property owner and an agency or person requesting permission to utilize a portion of a property. These agreements do not require the owner to sell the property, and the owner is typically compensated. Where the tunnel alignment crosses private property and no work on the surface is required, the Sanitation Districts would request a permanent subsurface easement from the owner that would grant rights to an area below ground that surrounds the tunnel. The property owner would retain full rights from the surface down to the upper boundary of the easement. Where a portion of a property is needed only during construction (e.g., a shaft site), the Sanitation Districts would request a temporary occupational right-of-way from the owner. However, as described in Section 3.3.2.2 of the draft EIR/EIS, the JWPCP West and Royal Palms shaft sites for Alternative 4 (the recommended alternative) are primarily located on property owned by the Sanitation Districts.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P27-5

The comment requests that a former hot springs pool near White Point be restored as part of the project.

See Response to Comment P27-1.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P28: Mark Wells – Resident

Commenter P28

Mark Wells

1838 Trythe Drive, Rancho Palos Verdes, CA. 90275
E-Mail: mswells@parbell.net

Date: April 9, 2012

Mr. Stephen Highter, P.E.
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
Facilities Planning Department
1955 Workman Mill Road
Whittier, CA 90601

RE: SCH# 2008101074, Clearwater Program, EIR/EIS

DearMr. Highter:

This is my set of comments for The Clearwater Program and more importantly, the Joint Water Pollution Control Plant's, (JWPCP) proposed new Outfall Tunnel System.

I am in great support of The Clearwater Program and I have stated as much in interviews by staff members of The Clearwater Program, at various times and in various ways and in talking with representatives of my city and local residents of Rancho Palos Verdes and San Pedro. I believe it is necessary to upgrade the Los Angeles County Sanitations Districts' Joint Outfall System (JOS) and I have been interested in learning more about The Program since I first learned of it, over five years ago.

My biography includes growing up very close to the two existing Joint Outfall Tunnel Systems under Western Avenue in the San Pedro and Rancho Palos Verdes areas. I continue to be a concerned resident of the area in which my wife and I reside.

I believe a new Joint Outfall Tunnel System is now necessary and should be welcomed by all those who would benefit from its construction and usage. My concerns lie not with the need or desire for this new construction, but rather the location of the new Tunnel System and a few of the aspects of the consideration of the Proposed Project's alignment and construction of the new Joint Outfall Tunnel System.

I have studied the Environmental Impact Report and even though I find myself not as objectionable to the Proposed Project's planned alignment of Alternative Number 4, as I was initially, both new and existing issues still plague me, with this Alternative and Alternative Number 3. P28-1

One of the most important issues I have with further work towards the construction of a new Joint Outfall Tunnel System with both Alternatives 3 and 4 is the fact that damage done to Paseo Del Mar, as a result of landslide activity, will create many new problems not previously considered, even in the EIR/EIS.

I am in agreement that the potential for new construction for any new Joint Outfall Tunnel System and Exit Shaft will not cause further damage to any area with landslide activity and I have confidence in the studies performed on the Geology of the areas, in the Report.

My major concern in this particular issue are the facts surrounding the possibilities that a major transit route for residents, visitors, construction teams and others has been eliminated from the areas near the sites for Alternative Nos. 3 and 4 and that there is no reconciliation of the landslide/road closure and there does not appear to be study or further analysis discussed between the Sanitation Districts and the City of Los Angeles, Department of Transportation, regarding these matters.

I feel very strongly that before much further study and work on the Proposed Project continues, everyone needs to feel confident that Paseo Del Mar will be restored to a viable thoroughfare long before any physical activity on a new Outfall Tunnel begins.

Another issue I found to be of concern is the routing of dirt haulers and other construction traffic related to the Proposed Project, Alternative Number 4 as it relates to routes not very well suggested in the EIR though the streets of San Pedro and/or the city of Rancho Palos Verdes.

I noted with the intersections where traffic counts were taken, they included intersections where construction vehicles might turn, but not necessarily through intersections that might see that particular traffic continue through, without turning.

One such intersection I found to be very lacking in study is the intersection of 25th Street and Western Avenue, in San Pedro.

Since it appears to me in the EIR/EIS, that construction vehicles MIGHT not utilize this particular intersection for turning, it was left out of much of the traffic counts provided for other intersections.

This alarms me because that intersection would be used exclusively for most, if not all vehicle traffic related to the Proposed Project, Alternative Number 4, in relation to the Exit Shaft and other construction planned for the Royal Palms area of San Pedro.

P28-2

It appears that no truck route is truly suggested for ingress and egress of traffic related to The Clearwater Program in the area of Royal Palms in San Pedro. The Report does not state whether large construction vehicles will proceed along Western Avenue, turn east onto 9th Street, then north onto Gaffey Street, to access the (110) Harbor Freeway, as some have stated.

I feel this is a major issue at it relates to placing the Exit Shaft and other construction as proposed in Alternative Number 4.

Since there doesn't seem to have been any 'real' documented study as to the routes through San Pedro, to be taken by massive dirt haulers and other construction vehicles, I find this particular portion of the EIR sorely lacking and in need of much further study long before any construction begins.

With the exception of residences and businesses in the 'South Shores' areas of San Pedro, most residents and businesses would not have any use for any new Tunnel System by the JWPCP, because the vast majority of those impacted during the construction period for Alternatives 3 and 4 use the city of Los Angeles' Sewage Treatment Plant on Terminal Island. P28-3

While it is my strong opinion that a new Outfall Tunnel is necessary, I must conclude that there has not been sufficient study with potential traffic issues related to both the Proposed Project and Alternative Number 3. This is made much stronger since I learned via a person within The Clearwater Program's representation, that little has been done between the Sanitation Districts and the city of Los Angeles concerning the entire scope of having lost Paseo Del Mar, in San Pedro, as a viable route and that this situation has the potential of becoming a permanent problem that was never studied, to this point. P28-4

I also feel it is unfair to task so many residents and businesses with the issues of having a major construction project for something they will not use. Those who would utilize the new Outfall Tunnel will benefit at the expense, for a period of time, of so many who would not only not have use of any new Outfall Tunnel, but would be encumbered with many negatives during construction periods and environmental issues that could linger even after a new Outfall Tunnel is finished. P28-5

While Alternative Number 1 is the most expensive and could take the longest construction period, I feel it remains the best Alternative for all and the aspects including close freeway access and potential rail transportation of diggings could be accomplished with Alternatives Numbers 1 and 2. P28-6

It was and remains my hope that the comment period of the EIR/EIS be extended or paused to allow for further study of the potential impacts caused by the unfortunate collapse of Paseo Del Mar and the now very necessary complete study and implementation of a positive resolution because of the unplanned loss of such a major roadbed. P28-7

I would also urge a much more thorough set of studies and information provision to all the residents and business owners near the areas of the Proposed Project's route and Exit Shaft, so they are much more well informed about what representatives of The Los Angeles County Sanitation Districts intend to do or participate in the resolution of the Paseo Del Mar situation and all the potential routes dealing with construction traffic related P28-8

to the Proposed Project, Alternative 4 and the entire scope of possibilities should that Alternative be ultimately selected as the final route for a new Joint Outfall Tunnel. P28-8 cont

I do understand that this EIR/EIS had many of its studies done several years ago. But things change and there has been at least one very big change since the Traffic Studies were done, several years ago. P28-9

Also troubling to many I have talked to is the fact that the EIR/EIS does not include enough information and study to indicate the possible routes of large dirt haulers and other construction traffic though San Pedro. I feel this should be a major concern to all those who live along any possible route where they will be impacted by construction traffic for an extended period of time. P28-10

Thank you for your considerations.

Regards,

Mark Wells
Rancho Palos Verdes Resident

Response to Comment P28-1

The comment requests additional traffic analysis to account for the closure of Paseo Del Mar due to a landslide.

The traffic analysis presented in Chapter 18 of the draft EIR/EIS used baseline traffic data collected in 2010, prior to the closure of Paseo Del Mar. It is unknown when the city of Los Angeles will rebuild Paseo Del Mar and in what manner. At the time this response was prepared, the city of Los Angeles had not yet identified or approved funding, and an engineering design option had not been selected. The closure of the roadway link between Western Avenue and Weymouth Avenue to motorized traffic has resulted in localized traffic patterns that differ from those that prevailed when the baseline traffic counts were collected.

Therefore, a subsequent traffic analysis was conducted to identify whether there would be differences in the impacts reported in the draft EIR/EIS if Paseo Del Mar were not re-opened by the time construction began for Alternative 4 (the recommended alternative). The updated analysis is based on traffic counts collected in May 2012 and reflects the current stabilized traffic patterns in the area. The analysis includes key intersections along the primary access route between the Royal Palms shaft site and Interstate (I-) 110: Western Avenue and Paseo Del Mar, Western Avenue and 25th Street, Western Avenue and 9th Street, Gaffey Street and 9th Street, and I-110 and Gaffey Street. The subsequent analysis, which is documented in a technical memorandum, is included in the final EIR/EIS as Appendix 18-D, confirms the findings of the draft EIR/EIS that construction of Alternative 4 (the recommended alternative) would not result in significant traffic impacts on the street system between Royal Palms Beach and I-110.

Section 18.4.6.2, under Project, Impact TRT-1, Shaft Site – Royal Palms, Construction, CEQA Analysis, fourth paragraph, is revised in the final EIR/EIS to add the following footnote "2" to the end of the paragraph:

> [2] Since the time of the project-level traffic analysis of Alternative 4, there was a landslide east of the Royal Palms shaft site that led the city of Los Angeles to close a portion of Paseo Del Mar to through traffic for an indeterminate period. The closure to motorized traffic of the roadway link between Western Avenue and Weymouth Avenue has resulted in localized traffic patterns that differ from those that prevailed when the baseline traffic counts used in the original analysis were collected. Because it is unknown whether this roadway segment would be reopened by the time of construction at the Royal Palms shaft site, an additional traffic analysis was performed to determine whether construction at the shaft site would result in different traffic impacts if Paseo Del Mar remained closed. This additional traffic analysis is included as Appendix 18-D. The analysis concluded that the construction traffic impacts with Paseo Del Mar closed would be consistent with the impacts in the original traffic analysis, and that the impacts at the analyzed intersections would be less than significant. The increase in traffic from the project with Paseo Del Mar closed would not exceed the city of Los Angeles' established thresholds of significance.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P28-2

The comment requests that the final EIR/EIS clearly indicate where on Western Avenue the construction trucks would turn to proceed to Gaffey Street or continue through. The comment also requests additional analysis for the intersection of Western Avenue and 25th Street.

The selection of study intersections analyzed in the draft EIR/EIS was based on the anticipated access routes of project-generated traffic during the construction period and included major intersections where project traffic is expected to turn.

As described in Chapter 18 of the draft EIR/EIS, truck trips were assumed to travel on Gaffey Street and Western Avenue to access I-110, along the most direct route to the regional freeway system. The assumed specific route followed the Royal Palms Beach access road to Paseo Del Mar (northbound left turn), Western Avenue (westbound right turn), 9th Street (northbound right turn), and Gaffey Street (eastbound left turn) to reach I-110. The reverse of this route was assumed for inbound truck trips to the Royal Palms shaft site. The city of Los Angeles allows trucks to travel on city streets unless otherwise prohibited. The assumed haul route to the Royal Palms shaft site follows streets classified as Major Highways Class II, with the exception of a short distance on Paseo Del Mar, which is classified as a Secondary Highway.

The subsequent analysis, which is documented in a technical memorandum included in the final EIR/EIS as Appendix 18-D and described in Response to Comment P28-1, includes the intersection of Western Avenue and 25th Street, which was not analyzed in the draft EIR/EIS. To provide a conservative analysis of potential project impacts, the most intense period of project construction was analyzed against projected future conditions. The updated analysis confirms the findings of the draft EIR/EIS, as described in Section 18.4.6.2, that less than significant impacts are anticipated during the construction phase of the project.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P28-3

The comment states that most affected homes and businesses in San Pedro use the city of Los Angeles' sewage system and, therefore, would not benefit from a new Sanitation Districts of Los Angeles County (Sanitation Districts) tunnel and outfall.

The Joint Outfall System (JOS) serves portions of the city of Los Angeles, including areas in the vicinity of the San Pedro community as shown on Figure 7-9 of the draft MFP. The recommended alternative (Alternative 4) would regionally benefit the entire JOS by providing for reliable JWPCP effluent management and would locally benefit the San Pedro community by reducing the potential of having to bypass JWPCP effluent flow into the Wilmington Drain. As described in the draft EIR/EIS, most of the construction-related project impacts would occur at the JWPCP West shaft site, which is located on the border between the city of Los Angeles and city of Carson. The majority of the residences and businesses in the immediate vicinity of the JWPCP West shaft site are within the JOS service area. Additionally, the residents of the South Shores area of San Pedro would benefit from the project because they are within the Sanitation Districts' service area for wastewater treatment.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P28-4

The comment expresses support for a new outfall tunnel but also raises a concern with the potential traffic impacts related to Alternatives 3 and 4 due to the closure of Paseo Del Mar.

See Responses to Comments P28-1 and P28-2.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P28-5

The comment states that it is unfair for residents and businesses in the area to be encumbered with many project negatives but none of the benefits.

See Response to Comment P28-3.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P28-6

The comment expresses support for Alternative 1 because of its close freeway access and potential for rail transportation of excavated materials.

The draft EIR/EIS provided a co-equal level of analysis for each of the four project alternatives, as well as a No-Project Alternative and No-Federal-Action Alternative. The draft Executive Summary contained a comprehensive table listing all of the significant environmental impacts and associated mitigation measures for each of the four project alternatives. Chapter 22 of the draft EIR/EIS provided a comparison of alternatives, which was summarized in Tables 22-1 and 22-2. Alternative 4 (the recommended alternative) would avoid marine environment impacts associated with constructing a new riser/diffuser and would minimize truck trips and air emissions due to its shorter tunnel length. Conversely, Alternative 1 would result in greater impacts on the marine environment due to new riser/diffuser construction, and significantly more air emissions and truck trips due to its longer tunnel length. Based on the overall environmental analysis, it was concluded that Alternative 4 (the recommended alternative) is the environmentally preferred and superior alternative. Furthermore, as discussed in Chapter 18 of the draft EIR/EIS, Alternative 4 (the recommended alternative) would result in less than significant traffic impacts related to haul routes. Therefore, overall, the potential for reduced traffic impacts associated with the other alternatives would not offset their other more substantial impacts.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P28-7

The comment requests an extension to the comment period for the draft EIR/EIS to allow further study of the potential effects of the loss of Paseo Del Mar as a major roadway.

The comment periods for the draft EIR and draft EIS were 60 and 57 days, respectively, which exceeded the 45-day requirements for both the California Environmental Quality Act and the National Environmental Policy Act. Therefore, the comment period was not extended. However, the Sanitation Districts and the U.S. Army Corps of Engineers have responded to all late comments received within a reasonable timeframe that would not delay preparation of the final EIR/EIS.

See Responses to Comments P28-1 and P28-2.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P28-8

The comment requests additional studies and outreach regarding tunnel alignments, clarification of the Sanitation Districts' involvement in repairing the Paseo Del Mar landslide, and consideration of the Paseo Del Mar landslide when selecting truck hauling routes.

The Sanitation Districts conducted extensive preliminary engineering studies in support of the Clearwater Program planning process. As referenced in Section 13.2.2.1 of the draft EIR/EIS, the Sanitation Districts conducted the Palos Verdes Flow Study from October 2000 through April 2008, which included the collection of temperature and current data on the Palos Verdes and San Pedro Shelves over a 9-year period. The more than 100 million data points generated from this unprecedented field observation program were used in a computer model to determine optimal locations for a new ocean outfall. CH2M Hill and MWH assisted in the preparation of the Clearwater Program Master Facilities Plan; Parsons Water Infrastructure, Inc., in association with Jacobs Associates, prepared a project feasibility study report for the tunnel/outfall alternatives; and Fugro West, Inc. prepared a preliminary geotechnical site characterization report for the onshore and offshore tunnel alignments, shaft sites, and ocean outfalls. Each of the studies and reports were referenced and cited throughout the draft EIR/EIS.

Extensive public outreach was also a vital component of the planning process. Appendix 1-B of the draft EIR/EIS included a comprehensive agency and public scoping report. In developing a plan that meets the needs of the communities and businesses served by the JOS, the Sanitation Districts felt it was important to involve the public from the onset. Since 2006, the Sanitation Districts have held over 500 public outreach meetings with public officials; civic and community groups; businesses; environmental organizations; news media; and various local, state, and federal agencies. Their input provided valuable guidance during the alternatives analysis and environmental review process. At the onset of the planning effort, a project website (www.ClearwaterProgram.com) and an information hotline (877-300-WATER) were established. In March 2008, long before any decisions were made, the Sanitation Districts conducted a series of public workshops in San Pedro, Carson, Wilmington, and Rancho Palos Verdes. Also, in October and November 2008, public hearings for the preparation of the draft EIR/EIS were held in San Pedro, Carson, Wilmington, and Whittier. The notice of availability for the draft EIR/EIS was mailed to approximately 4,000 addresses, including more than 3,000 homes and businesses along the alignments. Public hearings on the draft EIR/EIS were conducted in San Pedro, Carson, and Whittier in March 2012. All of these public workshops and hearings were advertised in several newspapers including the Daily Breeze, Press Telegram, Random Lengths, Beach Reporter, Peninsula News, Impacto, La Opinion, Wave Pub West Edition, Inland Valley Daily Bulletin, and San Gabriel Valley newspapers. In addition, three newsletters were circulated in the project area to keep the public and interested parties apprised of progress being made during the planning process. The mailing list for the third newsletter included every parcel along each the final four tunnel alignment alternatives.

The Paseo Del Mar landslide is under the jurisdiction of the city of Los Angeles and is being managed by the city's Bureau of Engineering. The Sanitation Districts contacted the Bureau of Engineering on May 16, 2012, to obtain information regarding the city's plans and timeline for repairing the portion of Paseo Del Mar affected by the landslide. The Bureau of Engineering indicated that they are developing a geotechnical report outlining repair options, costs, and other pertinent information. The timeline for repairs is undefined at this time because the city of Los Angeles has not yet identified or approved funding and has not selected an engineering design option.

See Responses to Comments P28-1 and P28-2.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P28-9

The comment states that there has been one significant change since the traffic studies for the draft EIR/EIS were conducted several years ago.

See Responses to Comments P28-1 and P28-2.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P28-10

The comment requests that additional information on the truck hauling routes from Royal Palms Beach through the community of San Pedro be provided and expresses concerns about traffic impacts during construction.

The truck trip generation estimates for the Royal Palms shaft site construction were presented in Table 18-29 of the draft EIR/EIS. For the purposes of analyzing the potential traffic impacts of the project, a passenger-car-equivalent factor of 2.0 was applied to each truck trip (i.e., the estimates shown in Table 18-29 were double the number of estimated truck trips, as noted in the table's footnote). It was estimated that a maximum of 40 truck round trips (80 total one-way truck trips) per day would occur during the approximately 9-month shaft construction period and subsequent 18-month manifold and tie-in construction period at the Royal Palms shaft site. Truck traffic would occur during one 10-hour shift, 5 days per week. For each hour of the workday, there would be an average of 4 inbound and 4 outbound truck trips, or about 1 truck trip every 7 to 8 minutes during the peak construction period.

As discussed in Section 18.3.4 of the draft EIR/EIS, the city of Los Angeles requires the preparation of traffic management plans for major construction projects that include designation of haul routes, among other elements, to ensure that any construction-related effects are minimized to the greatest extent possible.

See Responses to Comments P28-1 and P28-2.

No other revisions to the draft EIR/EIS are required in response to this comment.

Commenter P29: Lonna Calhoun – Resident

Commenter P29

Public Comment related to the Clearwater Sanitation Project:

Lonna Calhoun, CEM
1570 W. 9th Street
San Pedro, CA
310-569-5438

Concerns over Landslide Risk:

As a San Pedro resident and a Certified Emergency Manager I am concerned about the landslide risk in Alternative # 4. My concern is based on my experience in hazard analysis and risk mitigation specifically through 2010-2011 as a consultant for the City of Rancho Palos Verdes where I became interested in landslide activity on the Peninsula.

According to the Clearwater EIR:

Alternative # 4 *"could expose people, structures, or property to major geologic hazards such as landslides, mudslides, or ground failure."*

Alternative # 1 *"would not cross ancient landslides and would not result in renewed landslide movement during construction. Deep-seated ground failure is considered a low geologic hazard during construction. Impacts would be less than significant."*

Knowing that landslides can be caused by manmade activities the question becomes *landslide risk vs. no landslide risk.* I considered previous landslide history: 1929 - Sunken City, 1956 - Portuguese Bend, 1974 - Abalone Cove, 1981 - Klondike Canyon, 1983 - Flying Triangle, 1999 - Ocean Trails Golf Course, 2001 - The Peninsula Center, 2009 - 1800 block of West Paseo del Mar, 2010 – Sunken City Cliff Area, 2011 – Paseo Del Mar. Most notable is the Portuguese Bend Landslide that was triggered by manmade activities. It cost $14.6 Mil in the first year, millions since and the land continues to move at about 3 feet per year. P29-1

I'm concerned because the full scope/cause of the Paseo Del Mar Landslide is still undetermined and the majority of the EIR was completed prior to that event. It was mentioned by a Clearwater representative that there was a 2000 foot buffer between the Paseo Del Mar Landslide and Royal Palms. When you consider the distances between the Peninsula landslides I've listed, 2000 is an insignificant distance.

Furthermore, The EIR states that the Royal Palms site "consists of Altimira Shale". Our landslide vulnerability is due in part because the majority of the Peninsula is underlain by shale and siltstone units of the Monterey Formation. San Pedro News Pilot reported that Mark Pestrella, Assistant Director of Public Works told visiting officials evaluating the Paseo Del Mar slide, "The whole area is unstable"; "This is what we call coastal bluff landslide"; "The material here, because it does not have high cohesion, wants to slip into the ocean."

Our community has suffered a devastating loss with the Paseo Del Mar Landslide. We need better answers to these concerns.

<u>Request to extend April 10th Public Comment Time:</u>

Only one poorly attended public comment presentation was made in San Pedro on March 8th and no questions were allowed at that forum. Many residents are still unaware of the potential impact of this project. More marketing of the public comment meetings need to happen and we should have the public comment period extended. The community needs more time for public education P29-2

and public comment that is due to end on April 10th. We should also be able to ask and have questions answered at the public comment meetings. P29-2

Mitigation for San Pedro in compensation for landslide risk:

If Alternative # 4 of the Clearwater Project is chosen then there should be some compensation made to San Pedro for the landslide risk to our community. While we all benefit from infrastructure improvements this project will not be used by San Pedro residents but will used by LA County residents. San Pedro should not be asked to take the risk without any direct benefit. P29-3

Conclusion:

I do support the Clearwater Project but am concerned with Alternative # 4. I understand the vital importance of improving aging infrastructure and that risk is part of progress. However, the landslide risks to San Pedro should be fully considered, investigated further and the public should be better informed that landslide risk does exist. P29-4

Response to Comment P29-1

The comment is concerned that Alternative 4 (the recommended alternative) has the potential to initiate a landslide or ground failure in the surrounding cliffs due to shaft construction at the Royal Palms shaft site.

The draft EIR/EIS discussed the potential for landslides at the Royal Palms shaft site (part of Alternative 4 [the recommended alternative]), in Section 8.4.6.2, Impact GEO-1, Shaft Site – Royal Palms. The draft EIR/EIS stated that the shaft would be constructed in Altimira Shale, which could contain weak layers, and that excavation could result in ground failure in the vicinity of the shaft. The draft EIR/EIS recognized this as a significant impact. Mitigation was included to reduce this impact to less than significant. Specifically, Mitigation Measure (MM) GEO-1 and MM GEO-6a require geotechnical investigation and site-specific recommendations for stabilization of slopes and shaft instability. The mitigation measures state that all recommendations be incorporated into the final design. In addition, MM GEO-6b requires construction monitoring at the shafts and along the onshore tunnel.

In addition, Appendix 8-A of the draft EIR/EIS included a letter report, prepared by Fugro West, that addressed the potential for Alternative 4 (the recommended alternative) to affect slope stability in the Royal Palms area. This report was prepared in response to the recent landslide activity on Paseo Del Mar near White Point State Beach. In summary, the report stated that the Monterey Formation throughout the peninsula can be folded and variable over short distances. Weak bentonitic layers contained within the formation have resulted in some of the landslides when the bedding plane is out of slope (i.e., slopes downhill towards the ocean). In the vicinity of Royal Palms Beach, the bedding planes are sloped in a favorable inclination, which was confirmed during the excavation of the Sanitation Districts of Los Angeles County's (Sanitation Districts') 8- and 12-foot tunnels in 1938 and 1957, respectively. The report concluded that impacts on the stability of the existing slopes in the vicinity of the Alternative 4 alignment resulting from tunnel construction would be unlikely. Furthermore, the reinforced concrete tunnel may improve slope stability. The study recommended that (1) additional geotechnical investigation be conducted during final design and (2) the slopes be instrumented and monitored in advance of, and during, construction activities as a precautionary measure. Implementation of MM GEO-2, MM GEO-6a, and MM GEO-6b would fulfill these recommendations.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P29-2

The comment requests an extension of the comment period for the draft EIR/EIS, stating that only one public meeting was held, with no questions allowed, and that the meeting was not well publicized.

The comment periods for the draft EIR and draft EIS were 60 days and 57 days, respectively, which exceeded the 45-day requirements for both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). In addition, the Sanitation Districts and the U.S. Army Corps of Engineers (Corps) have given consideration to all late comments received within a reasonable timeframe that would not delay preparation of the final EIR/EIS.

During the comment period, a total of three public hearings were held in San Pedro, Carson, and Whittier. Notices for the hearings appeared in newspapers and were mailed to approximately 4,000 addresses. In addition, the notices were sent to the State Clearinghouse, published in the Federal Register, posted at the County Clerk's office, and featured on the Sanitation Districts and Clearwater Program websites. The noticing exceeded the requirements of CEQA and NEPA. The purpose of the meetings on the draft

EIR/EIS was to take comments on the document. Each of the comments received is addressed in the final EIR/EIS.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P29-3

The comment expresses concern that Alternative 4 (the recommended alternative) has the potential to initiate a landslide or ground failure in the surrounding cliffs due to shaft construction at the Royal Palms shaft site, and the project would not benefit the residents of San Pedro.

See Response to Comment P29-1 regarding landslide or ground failure associated with the project.

The Joint Outfall System (JOS) serves portions of the city of Los Angeles, including areas in the vicinity of the San Pedro community as shown on Figure 7-9 of the draft MFP. The recommended alternative (Alternative 4) would regionally benefit the entire JOS by providing for reliable JWPCP effluent management and would locally benefit the San Pedro community by reducing the potential of having to bypass JWPCP effluent flow into the Wilmington Drain. As described in the draft EIR/EIS, most of the construction-related project impacts would occur at the JWPCP West shaft site, which is located on the border between the city of Los Angeles and city of Carson. The majority of the residences and businesses in the immediate vicinity of the JWPCP West shaft site are within the JOS service area. Additionally, the residents of the South Shores area of San Pedro would benefit from the project because they are within the Sanitation Districts' service area for wastewater treatment.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P29-4

The comment expresses support for the Clearwater Program but concern that Alternative 4 (the recommended alternative) has the potential to initiate a landslide in the surrounding cliffs due to shaft construction at the Royal Palms shaft site.

The Sanitation Districts and Corps appreciate the support expressed for the Clearwater Program. The comment will be provided to the decision makers for their consideration.

See Response to Comment P29-1 regarding landslide potential at the Royal Palms shaft site.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P30: Heal the Bay – W. Susie Santilena, Environmental Engineer, and Kirsten James, Director of Water Quality

Commenter P30

Heal the Bay

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April 10, 2012

Steven W. Highter
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, CA 90601
Sent Via email to [shighter@lacsd.org]

Re: Comments on Clearwater Program Draft Environmental Impact Report

Dear Mr. Highter:

On behalf of Heal the Bay, we submit the following comments on Clearwater Program ("Program") Draft Environmental Impact Report ("DEIR") issued by the Sanitation Districts of Los Angeles County ("Districts"). We appreciate the opportunity to provide these comments.

Heal the Bay is a nonprofit environmental organization with over 13,000 members dedicated to making the waters of Southern California clean and healthy for marine life and people. Heal the Bay has actively worked to improve water quality in the Santa Monica Bay for over 26 years. In the context of this project, Heal the Bay has long followed water quality regulatory issues associated with the Districts and was a party to the consent decree negotiated in response to the suit USEPA and the California Regional Water Quality Control Board filed against the Districts under Section 309 of the Clean Water Act to comply with full secondary treatment at the JWPCP by December 31, 2002.[1] P30-1

There are aspects of the Clearwater Program we support, such as its goals to create a plan to increase water reuse, to optimize water treatment plants within the Joint Outfall System ("JOS"), and to improve system reliability and accommodate future flows, while protecting public health. However, we have a number of questions and concerns regarding the DEIR that are outlined below. We also offer suggestions for additional options to explore that could ultimately reduce the need for a second outfall. Minimizing discharge is beneficial to overall water quality and avoiding outfall construction is favorable for marine habitat protection. If an outfall project does move forward, it is critical that mitigation take place for marine mammal and marine habitat disturbance.

The EIR should evaluate water recycling, treatment system upgrades, and discharge to Wilmington Drain as alternatives to the pipeline. P30-2

[1] *Joint Water Pollution Control Plant, Upgrade to Full Secondary Treatment; Intent To Prepare a Draft Environmental Impact Statement* Federal Register Vol. 60, No. 18 / Friday, January 27, 1995 / Notices P. 5389

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Water Recycling

The EIR should evaluate increased recycling of water at the Districts' seven treatment plants connected to the JOS and expansion of recycled water use throughout its service area as an alternative to the proposed Project. Section 3.3.1.2 of DEIR mentions that JOS is expected to have a treatment capacity shortfall of around 20 million gallons per day (MGD) needed to accommodate future flows, yet it appears that by optimizing treatment plant operations in all of its plants, the Districts will be able to increase water reuse by anywhere from 16-47 MGD. Has there been any analysis to determine if the Districts could increase water recycling instead of building a new tunnel altogether? If so, what were the results? We believe the option of treatment upgrades and increased water recycling either at upstream plants and/or JWPCP is worth investigating and could be included as an additional alternative evaluated in the EIR. Water recycling is an important component of the development of sustainable water resources in both the short- and long-term. In order to further increase water recycling, the Districts should also investigate ways to expand demand and uses for recycled water in its service area. Having "satellite" water recycling plants is also helpful in finding economically viable uses for the water. Have the Districts tried working with CDHP to expand allowable uses of recycled water, such as use for toilet flushing and other indoor non-potable uses? P30-2 cont.

Advanced Treatment and Discharge to Wilmington Drain and Machado Lake

Proposition O authorized the City of Los Angeles to issue a series of general obligation bonds for up to $500 million for projects to protect public health by cleaning up pollution, including bacteria and trash, in the City's watercourses, beaches and the ocean, in order to meet Federal Clean Water Act requirements. In addition, the measure funds improvements to protect water quality, provide flood protection, and increase water conservation, habitat protection, and open space.[2] Heal the Bay played a key role in securing this funding for projects by strongly supporting Proposition O on the ballot. Heal the Bay also sat on the Proposition O Citizens Oversight Advisory Committee (COAC) that is responsible for monitoring the bond program, projects, budgets and schedules and to advise and report to the Mayor and the Los Angeles City Council on its status. Thus, we are extremely supportive of Prop O projects such as the Wilmington Drain Multi-Use Project and Machado Lake Rehabilitation Project sited at Harbor Park. The City has earmarked Proposition O funding to implement the project by mid-2014. This $117 million project will be the key to meeting the wasteload allocations ("WLAs") in multiple TMDLs aimed at addressing water quality issues in the Lake. P30-3

Unfortunately, the Machado Lake system is starved for water inputs, partly because the Districts' Bixby Marshland demands most of the dry-weather flows from the Wilmington Drain, which would otherwise feed the lake. In order to meet water quality standards and replenish the lake, the City of Los Angeles is considering replenishing the lake with potable water, a precious resource that must be conserved for other uses. The Notice of Availability that accompanied the

[2] Proposition O Background http://www.lapropo.org/index.htm Accessed 4 Apr. 2012

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DEIR and Section 3.4.1.5 of the DEIR states that if the tunnels were to be damaged or the capacity of the ocean discharge system exceeded, treated JWPCP effluent would need to be bypassed into the Wilmington Drain, a stormwater channel that flows through the Harbor Regional Park (Notice of Availability Page 2, DEIR Page 3-28). This leads us to believe the infrastructure is in place for JWPCP to discharge into the Drain. Is this a correct assumption? Unfortunately, JWPCP's effluent quality currently does not consistently meet all water quality standards for the Lake. Have project proponents investigated the feasibility of upgrading JWPCP treatment to a level where JWPCPs effluent could be regularly discharged to Wilmington Drain to allow for maintenance of the existing JOS tunnel infrastructure? Text within the Draft Clearwater Program Facilities Master Plan ("Draft FMP") insinuates this option was not examined for JWPCP when it states, "Taking into account the facility's current operational effectiveness and efficiency of treatment, consideration of either a new process or significant changes for process optimization are not warranted nor included in this option. As such, any future expansion at the JWPCP would be consistent with current processes and configurations" (Draft FMP Page 6-11).

P30-3 cont.

Our research suggests that Wilmington Drain and Machado Lake have the capacity to handle dry-weather effluent flows from JWPCP. Wilmington Drain had a design capacity varying from 5,400 cfs (approximately 3,500 MGD) at its northern portion near the 110 Freeway to 7,000 cfs (approximately 4,500 MGD) at its southern portion near Machado Lake. This is enough capacity for the 593 MGD discharge from the seven wastewater treatment plants connected to the JOS, along with storm runoff in excess of the 2-year, 24-hour design storm (1500 cfs) through the described stretch of Wilmington Drain.[3] Our understanding is that the lake itself is also equipped to handle large inputs from the Wilmington Drain. Machado Lake is comprised of upper and lower basins separated by a low earthen dam. The upper basin contains the 40-acre recreational lake created by impoundment of stormwater runoff; the lower basin is a seasonal freshwater marsh of roughly 63 acres. The dam was designed to maintain the level of the lake at a maximum of approximately 10 feet above mean sea level. During major storms, water flows over the dam into the lower basin and ultimately to the Harbor Outfall at the southeastern corner of the park, where it is discharged to the West Channel of the Los Angeles Harbor[4] (see Attachment 1).

Given the potential capacity of Wilmington Drain and the need for water inputs to Machado Lake, the Districts should look at the alternative to treat water from JWPCP or upstream plants to a higher level and discharge to Wilmington as an alternative way of relieving pressure on the existing JOS and to allow for its maintenance, as well as to offset potable water usage in Machado Lake and provide other water quality and supply benefits. As a part of the analysis of this alternative, the Districts should confirm maximum capacity of the lake needed to maintain

[3] Source: email correspondence with Los Angeles County Water Resources Department staff 4/3/2012
[4] City of Los Angeles Department of Public Works, Bureau of Engineering. Machado Lake Ecosystem Rehabilitation Project Wilmington Drain Multi-Use Project Pre-Design Report Executive Summary Page 3. July 2009.

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habitat value. The proposed Project is estimated to cost $550 million. How would this compare to the cost of advanced treatment at JWPCP and/or upstream plants? Project proponents should investigate this option to eliminate the need for an additional tunnel. As an added benefit, a portion of the advanced treated water could be sold to industrial users, used for indirect potable use and groundwater replenishment, or sold to other entities to recoup a portion of the costs of advanced treatment. Investing in advanced treatment would also help the Project meet its goal of providing "a long-term solution for meeting water quality requirements set forth by regulatory agencies" (Public Notice Page 2). Advanced treatment may provide high enough quality water so that flows intermingled with secondary treated water could still meet waste load allocations when discharged to Wilmington Drain, allowing for even more relief to the overtaxed system. As a side question, what are the maximum flows that can exist in the current outfall tunnel that would allow for repairs? This information can also be factored into this alternative. P30-3 cont.

Other treatment plants have opted to install advanced treatment as an alternative to building a second ocean outfall. For example, when faced with the possibility of having to build a second ocean outfall that would have cost approximately $200 million, the Orange County Sanitation District instead partnered with the Orange County Water District to create the Groundwater Replenishment System – the world's largest wastewater purification system for indirect potable reuse. This system treats and reuses 70 MGD of treated wastewater for a saltwater intrusion barrier and to replenish groundwater basins.

Project proponents should work towards 100% beneficial reuse of any dredged material resulting from the proposed Project.

Over the past fifteen years, Heal the Bay has worked with the Los Angeles Contaminated Sediments Task Force and others to develop solutions the management of contaminated sediment and other dredged material in the Los Angeles Region. The *Los Angeles Regional Contaminated Sediments Task Force: Long-Term Management Strategy* contains a goal for projects to beneficially reuse 100 percent of dredged contaminated sediment. We are disappointed to learn that over 30 million cubic yards of material from dredging activities associated with the project could potentially end up at USEPA's open-ocean dredged disposal sites LA-2 and LA-3. Section 13.4.1 states "Suitable dredge and tunnel spoils as a result of construction activities would be disposed of at LA-2 or LA-3, or sidecast, if practicable, for graded seafloor sediments." (DEIR Page 13-44). This is an enormous amount of material and would be a huge waste. While this material might not be considered "contaminated," it is important that it is beneficially reused instead of being disposed of in the ocean. Clean material does not require the same level of containment and caution in its handling as contaminated material; hence, there should be more potential uses for this material in coastal and inland projects. For instance, if physically compatible with beach sands, clean sandy dredged material may be used for beach nourishment. In addition, a large amount of clean material is needed for capping the USEPA's Superfund Site off of Palos Verdes Shelf. Barging material six miles offshore and dumping in the ocean disposal P30-4

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sites is not logical when the material is clean enough to be beneficially reused in local projects. Project proponents should exhaust all other beneficial reuse options prior to choosing offshore disposal at LA-2 and LA-3. Also, the Districts should work with other dredging project proponents, the Los Angeles Regional Water Quality Control Board, the Army Corps of Engineers, and the other regulatory entities involved in the Dredged Materials Management Team to develop a specific plan for beneficial reuse as soon as possible that includes interim goals with a timeline to reach the 100 percent reuse goal. P30-4 cont.

Project Proponents should promote water use efficiency and conservation measures to further reduce future capacity shortfalls of the JOS.

We encourage project proponents to look for additional ways to encourage ratepayers to conserve water and take pressure off of the Joint Outfall System, including promoting the use of waterless urinals (which each save an average of 20,000-45,000[5] gallons of potable water annually) instead of conventional urinals within commercial properties. The current precarious state of our water supply in California necessitates that our region reduces potable water usage and conserves water to the greatest extent possible. As you know, water rates are increasing throughout our region, mainly due to water shortages and the need to repair our aging water infrastructure. Water shortages are expected to worsen due to climate change and population growth. Project Proponents should: a) make sure these factors are considered in its projections for increased water demand, and b) utilize public outreach, financial incentives, and other resources to further encourage water conservation among its user base. P30-5

It is crucial that project proponents address these issues discussed above. If you have any questions or would like to discuss any of these comments, please feel free to contact us at (310) 451-1500.

Sincerely,

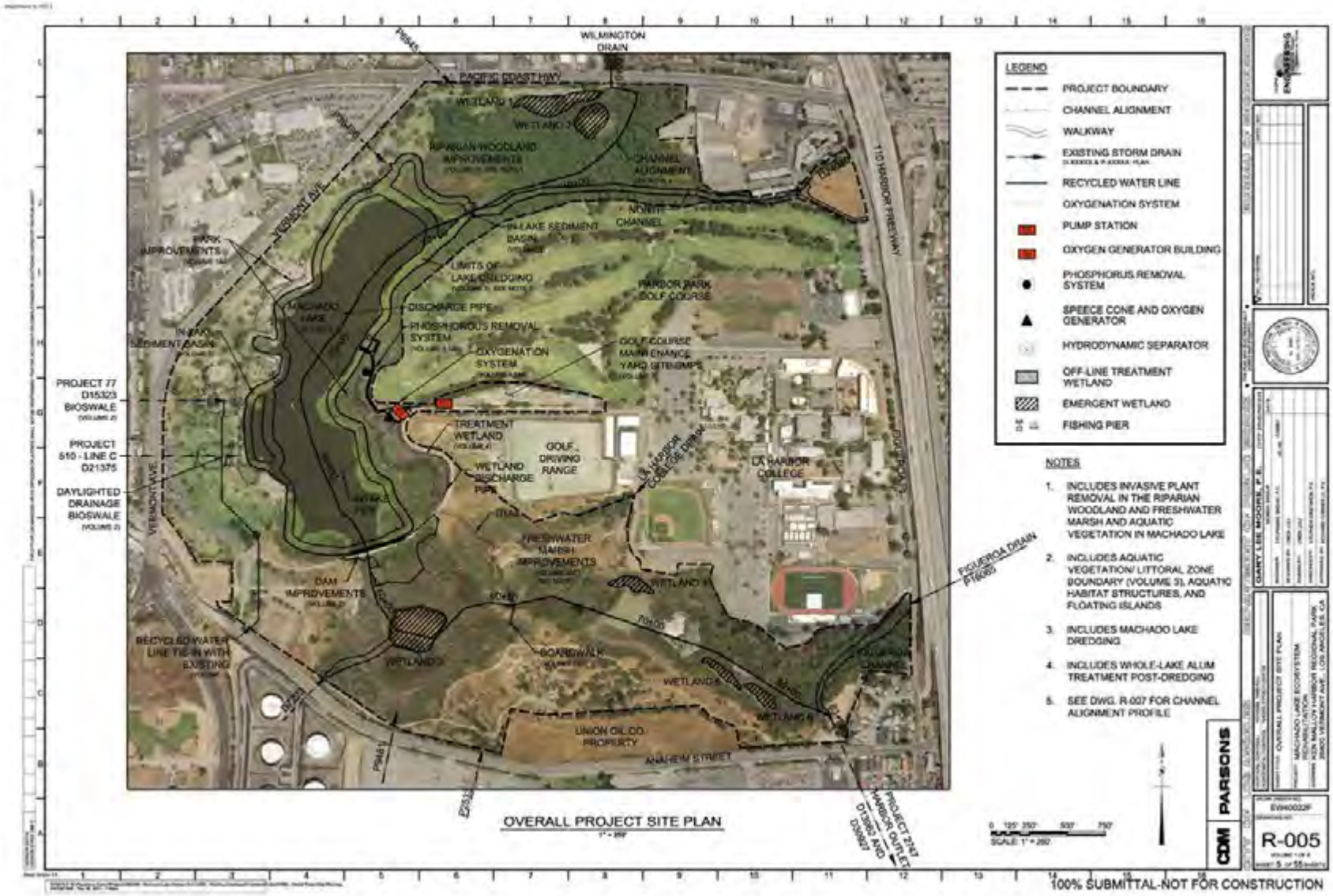
W. Susie Santilena
Environmental Engineer/Water Quality

Kirsten James
Director of Water Quality

[5] Waterless.com Homepage: Water Conservation.
http://www.waterless.com/index.php?option=com_content&task=view&id=17&Itemid=44

Attachment to P30-3

2 | EXECUTIVE SUMMARY JULY 2009


WILMINGTON DRAIN
PACIFIC COAST HWY
WETLAND 1
WETLAND 2
RIPARIAN WOODLAND IMPROVEMENTS
CHANNEL ALIGNMENT
NORTH CHANNEL
IN-LAKE SEDIMENT BASIN
LIMITS OF LAKE DREDGING
HARBOR PARK GOLF COURSE
VERMONT AVE
PARK IMPROVEMENTS
MACHADO LAKE
DISCHARGE PIPE
PHOSPHORUS REMOVAL SYSTEM
OXYGENATION SYSTEM
GOLF COURSE MAINTENANCE YARD STRUCTURE
IN-PARK SEDIMENT BASIN
PROJECT 77 D15323 BIOSWALE
PROJECT 510 - LINE C D21375
DAYLIGHTED DRAINAGE BIOSWALE
TREATMENT WETLAND
GOLF DRIVING RANGE
WETLAND DISCHARGE PIPE
LA HARBOR COLLEGE DRAIN
LA HARBOR COLLEGE
110 HARBOR FREEWAY
FIGUEROA DRAIN
FRESHWATER MARSH IMPROVEMENTS
WETLAND 4
DAM IMPROVEMENTS
RECYCLED WATER LINE TIE-IN WITH EXISTING
WETLAND 3
BOARDWALK
WETLAND 5
WETLAND 6
UNION OIL CO. PROPERTY
ANAHEIM STREET
PROJECT 2747 HARBOR OUTLET D13862 AND D30927
LEGEND
PROJECT BOUNDARY
CHANNEL ALIGNMENT
WALKWAY
EXISTING STORM DRAIN
RECYCLED WATER LINE
OXYGENATION SYSTEM
PUMP STATION
OXYGEN GENERATOR BUILDING
PHOSPHORUS REMOVAL SYSTEM
SPEECE CONE AND OXYGEN GENERATOR
HYDRODYNAMIC SEPARATOR
OFF-LINE TREATMENT WETLAND
EMERGENT WETLAND
FISHING PIER
NOTES
1. INCLUDES INVASIVE PLANT REMOVAL IN THE RIPARIAN WOODLAND AND FRESHWATER MARSH AND AQUATIC VEGETATION IN MACHADO LAKE
2. INCLUDES AQUATIC VEGETATION/ LITTORAL ZONE BOUNDARY (VOLUME 3), AQUATIC HABITAT STRUCTURES, AND FLOATING ISLANDS
3. INCLUDES MACHADO LAKE DREDGING
4. INCLUDES WHOLE-LAKE ALUM TREATMENT POST-DREDGING
5. SEE DWG. R-007 FOR CHANNEL ALIGNMENT PROFILE
OVERALL PROJECT SITE PLAN
SCALE: 1" = 250'
PARSONS
R-005
100% SUBMITTAL-NOT FOR CONSTRUCTION

Response to Comment P30-1

The comment provides background information about Heal the Bay and serves as an introduction to subsequent comments. See Responses to Comments P30-2 through P30-5.

Response to Comment P30-2

The comment asks if the Sanitation Districts of Los Angeles County (Sanitation Districts) have analyzed the potential for increased water recycling at the upstream water reclamation plants (WRPs) to obviate the need to build a new tunnel and because of its importance to water resource sustainability. The comment also suggests that the Sanitation Districts investigate ways to expand demand and uses for recycled water in the Joint Outfall System (JOS) service area.

The Sanitation Districts recognize that recycled water is an essential regional resource, which is why one of the four primary objectives of the Clearwater Program is to "provide support for emerging recycled water reuse…opportunities." Under the recommended plan (Alternative 4), as described in Chapter 7 of the draft MFP, projected increases in wastewater flow would be accommodated through a 25-million-gallons-per-day (MGD) expansion of the SJCWRP West. As described in Chapter 1 of the draft Master Facilities Plan (MFP), the Sanitation Districts have pioneered water reclamation and reuse in Southern California, beginning with the completion of the Whittier Narrows Water Reclamation Plant in 1962. The Sanitation Districts now own and operate 10 WRPs that produce approximately 165 MGD of high-quality recycled water. Approximately half of the recycled water is reused at over 640 sites throughout Los Angeles County for groundwater replenishment; industrial, commercial, and recreational applications; habitat maintenance; and agricultural and landscape irrigation. The other (unused) half of the recycled water produced is currently wasted, and discharged to nearby receiving waters (i.e., rivers, creeks, and channels) that convey it to the ocean.

While efforts to increase reuse at the JOS WRPs through coordination with local water agencies and regulators are ongoing, the anticipated success of these efforts will have no bearing on the need to build a new effluent tunnel at the Joint Water Pollution Control Plant (JWPCP). The permitted capacity of the JWPCP would remain at 400 MGD, and the associated peak flows of 927 MGD would require an approximately 18-foot-diameter (internal) effluent tunnel. Therefore, even if the Sanitation Districts could achieve the goal of 100 percent reuse at the WRPs, there would not be a commensurate reduction in wastewater flow to the JWPCP; there would only be a reduction to what is currently discharged to the receiving waters by the WRPs.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P30-3

The comment encourages the construction of advanced wastewater treatment at the JWPCP and discharge to Wilmington Drain as a potentially cost-effective alternative to a new tunnel and outfall. It states that Machado Lake needs supplemental water and that recycled water would be preferred over potable water. The comment suggests that new treatment may be more cost-effective than a new tunnel. It also claims that Machado Lake lacks water inputs that are instead used for the Sanitation Districts' Bixby Marshland.

Chapter 6 of the draft MFP explored the possibility of providing advanced treatment (such as microfiltration/reverse osmosis, ultraviolet disinfection, and advanced oxidation) at the JWPCP. Specifically, Section 6.2.6 of the draft MFP analyzed the feasibility of diverting enough flow from the

existing JWPCP ocean discharge system to allow for the inspection and repair of each of the existing tunnels (Option JE 4 Reduced Ocean Discharge). To accommodate reuse and storage of the required 200 MGD of diverted flow, advanced treatment would be necessary. This reduced ocean discharge option specifically contemplated diversion of this advanced-treated effluent to the Central, West Coast, and/or Main San Gabriel Basins for groundwater recharge (i.e., indirect potable reuse). However, the reduced ocean discharge option was determined to be not viable for reasons presented in Section 6.2.6.5 of the draft MFP and thus was not further evaluated in the draft EIR/EIS.

Alternatively, as suggested by this comment, the advanced-treated effluent under the reduced ocean discharge option could potentially be discharged to the Wilmington Drain. However, this discharge location shares many of the same concerns discussed in Section 6.2.6.5 of the draft MFP, including those relating to constructability, operational flexibility, reliability, and familiarity. Hydraulically separating the two existing tunnels while both are flowing full each day would be a complex undertaking. Only then could flow be diverted to one tunnel, with the balance of the flow being diverted to the advanced treatment facilities for discharge to the Wilmington Drain so that inspection/repair work could ensue in the other dewatered tunnel. Tunnel inspection/repair would need to occur during the dry season when flows are typically lower. However, there would always be the risk of a severe unseasonal storm event that could overwhelm the advanced treatment facilities and thus require a portion of the secondary-treated JWPCP effluent to be diverted directly to the Wilmington Drain in violation of the JWPCP discharge permit. This option would also require the operation of a completely new and complex treatment system to enhance the JWPCP's effluent quality. Lack of familiarity and system complexity would reduce the options' overall operational reliability. And, even if all of these impediments could be overcome, it would be very difficult to implement this option within a reasonable timeframe (i.e., approximately 10 years).

A reduced ocean discharge option that relies on discharge to the Wilmington Drain raises other concerns beyond those discussed in Section 6.2.6.5 of the draft MFP. First, the Wilmington Drain flows directly into Machado Lake, which is currently slated for major restoration. The restoration project includes providing an average of 1 cubic feet per second (0.6 MGD) of recycled water from the Terminal Island WRP to supplement flow already provided by the Wilmington Drain. According to the project manager, the 200 MGD the Sanitation Districts would need to divert to the Wilmington Drain would far exceed the average daily flows for which the Machado Lake restoration project is being designed and could potentially result in adverse impacts. A flow of this magnitude would exceed the capacity of the low-flow outlets in the Machado Lake dam. Consequently, there would be permanent overflow of the dam during the summer, cutting the east side of the lake off from the west, thus restricting public access to the park facilities. The proposed lake edge planting and terrace, pedestrian bridge in the lower freshwater marsh, and pedestrian walkway could be affected as well. The trash net system operating in the Wilmington Drain could also be impacted, as could the ecosystem in the Wilmington Drain, which provides habitat for the protected least Bell's vireo (Ahmed pers. comm.). Second, the primary function of the Wilmington Drain is to provide flood control for the local area, and storm flows in the Wilmington Drain have historically reached or exceeded its capacity. For example, as a result of a 1995 storm event, the Wilmington Drain overflowed its concrete channel next to the JWPCP and came within inches of overflowing a berm located between the drain and the plant. Consequently, because of the potential for a significant storm event at any time during the year, the Sanitation Districts cannot reliably discharge any amount of JWPCP effluent to the Wilmington Drain. Third, discharge to the Wilmington Drain would require a significant investment in facility upgrades at the JWPCP. It is estimated that the required treatment and storage facilities would cost over $1 billion, and there are no confirmed local reuse opportunities to offset these costs through the sale of the recycled water.

Finally, the recommended alternative (Alternative 4) provides benefits that would not be realized under the reduced ocean discharge option. As discussed in Chapters 1 and 7 of the draft MFP and in Chapter 1 of the draft EIR/EIS, in addition to aging infrastructure concerns, the existing tunnels cross the active Palos Verdes Fault and cannot accommodate projected peak wastewater flows associated with major storm events. A new tunnel would be constructed to current seismic standards and would have a hydraulic capacity of approximately 1,080 MGD, which can accommodate the peak storm flows of 927 MGD projected for the year 2050. Therefore, the reduced ocean discharge option, with or without utilization of the Wilmington Drain as a discharge location, is not viable and was not further analyzed in the draft EIR/EIS as a feasible project alternative.

Additionally, the Sanitation Districts' Bixby Marshland is designed to return stormwater and urban runoff flows back to the Wilmington Drain upstream of Machado Lake while providing wetland habitat to a variety of birds, animals, and plants. Therefore, the Bixby Marshland does not reduce water inputs to Machado Lake.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P30-4

The comment requests that the project beneficially reuse all dredged material if feasible. All other options should be exhausted before choosing offshore disposal, in accordance with a management strategy developed by the Los Angeles Regional Contaminated Sediments Task Force. The comment suggests specific beneficial reuse options and all relevant project and regulatory entities to facilitate a reuse plan.

The only marine work proposed under Alternative 4 (the recommended alternative) would be the rehabilitation of the existing ocean outfalls. As described in Section 7.2.5.4 of the draft MFP, Section 3.3.2.3 of the draft EIR/EIS, and the draft Executive Summary, rehabilitation of the existing ocean outfalls would include re-ballasting and joint repairs. Rehabilitation of the existing ocean outfalls would not require mechanical dredging or removal of large quantities of sediment. A small derrick barge would be used to place the ballast rock around the outfalls and to support the joint repair work. The re-ballasting work would occur on the existing 72-, 90-, and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A tube extending from the barge deck to the ocean floor would ensure that placement of ballast rock would not extend beyond the existing footprint. Joint repairs would require the temporary removal of sediment and ballast rock to fully expose the joint being repaired. A team of divers would remove the ballast rock and hand-shovel approximately 2 cubic yards of sediment from each joint. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. Cathodic protection would also be restored or added where necessary. It is estimated that approximately 10 to 40 joints would require repair, resulting in the hand removal of approximately 20 to 80 cubic yards of sediment. Therefore, because no mechanical dredging would be associated with Alternative 4 (the recommended alternative), the rehabilitation work would entail removal of *de minimis* quantities of sediment, none of which would require offshore disposal at LA-2 and LA-3.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P30-5

The comment encourages project proponents to promote water use efficiency and conservation to further reduce capacity shortfalls of the JOS.

The Sanitation Districts agree that water use efficiency and conservation measures can effectively reduce future capacity shortfalls of the JOS. The flow projections presented in Section 4.8 of the draft MFP were based on a per-capita wastewater generation rate derived over an 8-year period that included years of sustained drought conditions and increased water conservation efforts. The resulting per-capita generation rate was determined to be 83 gallons per capita per day (gpcd), which is 18 percent lower than the 101-gpcd rate used for the previous JOS facilities planning effort in 1995. Although the Sanitation Districts have historically supported water conservation within the JOS service area, and will continue to do so, the California Health and Safety Code limits what the Sanitation Districts can do to promote water conservation. Additionally as described in Section 3.6.2 of the draft MFP, state regulations require the capacity of sanitary sewer systems to be appropriately designed to reasonably prevent overflows. Therefore, as previously discussed, Alternative 4 (the recommended alternative) would benefit the entire service area by providing adequate system capacity, improving overall system reliability, and reducing the risk of discharges to the Wilmington Drain or sewer overflows.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P31: Sierra Club Angeles Chapter – Charming Evelyn, Chair, Water Committee

Commenter P31

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RE: Comments on Clearwater Program Draft Environmental Impact Report/ Environmental Impact Statement

The following comments are submitted on behalf of the Sierra Club Angeles Chapter in response to the Draft Environmental Impact Report (DEIR)/Draft Environmental Impact Statement (DEIS) prepared for the Clearwater Program.

We recognize the need for an additional tunnel from the Sanitation Districts' Joint Water Pollution Control Plant (JWPCP) in Carson to the ocean, (1) in order to inspect, and if necessary, repair the existing tunnels and (2) to provide additional capacity for possible future high-flow storm events such as happened in January 1995. Such storm events are likely to become more frequent with global warming. Also, sea level will continue to rise because of global warming, so that there will be decreased hydraulic head between the JWPCP and the ocean outfall. P31-1

Clearwater construction would *yield of 165 million gallons per day of high quality recycled water*. That Clearwater elevates recycled water to major player status in our local water resources inventory is only hinted at in this report.

After review of the DEIR/DEIS, we believe that this document is inadequate to meet CEQA requirements.

Chapters-Number/Titles p.Chap.N-pg # Text-Quotation ***Comments***

ES-1 Executive Summary (DEIR and MFP) is based on inadequate and incomplete assessment of Program and a single Project impacts, their significance, and appropriate mitigations (see comments below) and therefore must be considered as incomplete and inadequate and must be reviewed and revised in accordance with revisions of the DEIR for adequacy and completeness. P31-1 cont

p.ES-3 The wastewater from homes and businesses flows...to seven wastewater treatment plants with a combined permitted capacity of 593 MGD.
p.ES-4 Approximately one-third of the wastewater...is treated at six WRPs...produce high-quality recycled water that is beneficially reused (e.g., landscape irrigation and groundwater recharge)...remaining two-thirds, which includes saltier industrial wastewater...is treated at...JWPCP in Carson...solids removed at the WRPs...returned to the trunk sewers to be **cost-effectively** processed at the JWPCP.
ES-2 This part of the project description clearly indicates that the six upper WRPs do not provide complete sewage treatment (e.g., sludge digester, dewatering, and storage/transport) or cause the same environmental effects as those of the JWPCP in Carson. Thereby the upper WRPs and their service areas (above +300ft elevation) avoid impacts from sludge processing and disposition but receive benefits (e.g., abundant cheap treated recycled irrigation water) which are not available to lower service areas' residents and in Carson (those below +300ft elevation). As these areas represent different communities with different economic, ethnic, and other relationships, these difference become the basis for comments on environmental justice elsewhere. The current and proposed Programmatic effects are significant and continuing and avoided throughout the DEIR. The current and proposed projects and Program must address adequately and completely the differences between benefits and effects in the upper and lower service areas and facilities before any new facilities are proposed. P31-2

p.ES-7 CLEARWATER PROGRAM GOALS ***[vs]*** **OBJECTIVES** The Clearwater **Program...objectives**:
Provide adequate system capacity to meet the needs of the growing population.
Provide for overall system reliability by allowing for the inspection, maintenance, repair, and replacement of aging infrastructure.
Provide support for emerging recycled water reuse and biosolids beneficial use opportunities.
Provide a long-term solution for meeting water quality requirements set forth by regulatory agencies.
ES-3a The Executive Summary and DEIR fails to provide the "Goals" of the Program or Project and the preparers appear to have confuse objectives and goals without definitions of the terms. All sections fail to provide shorter term, dated and quantitative expected/planned achievement (=objectives). Therefore the provided "objectives" are incomplete and inadequate or they are goals and no objectives are provided. P31-3

Appendix 1-A PRELIMINARY SCREENING ANALYSIS, Chap.2 p.1-A 2.2 2.1.3 Clearwater Program Objectives The Clearwater Program is necessary to ensure adequate JOS wastewater system capacity and reliability through the year 2050...following objectives were P31-4

identified in the Master Facilities Plan (MFP) and are the **California Environmental Quality Act (CEQA) objectives**: *List is identical with those of p.ES-7*

ES-3b The Executive Summary provides similar Program "objectives" while the Screening further emphasizes capacity and reliability, and both do not provide the 2050 Goals on which the objectives would be based. Therefore the fundamental basis for alternatives and proposed Program components and the Project itself are inadequately developed and not based on scheduled and quantitative parameters and criteria. P31-4 cont

p.ES-7 ...**philosophy** is to design, construct, and maintain **reliable** systems that have **sufficient capacity and redundancy** to provide the **highest level of public safety and environmental protection**. These systems are maintained with routine inspection, repair, and/or replacement as required...critical component...onshore tunnels for the existing ocean discharge system, has not been inspected for over 50 years. Both tunnels cross the active Palos Verdes Fault, which is an additional **area of concern**...Districts have **no reason** to believe **serious** problems exist...imperative that they be **properly** inspected. Addressing aging infrastructure is an **important objective** of the Clearwater Program.

ES-4a Engineering is not philosophy although the remainder of the paragraph contains many undefined, arbitrary, and unquantitative words and phrases. If aging is an important objective why wasn't it place specifically in the list of objectives. Aging and redundancy are not defined but would be estimated, say 100-yr life of project (along a depreciation or capital replacement provision) or 25% capacity, in order to quantify the aging and related redundancy/reliability. Lack of timely proper inspection and maintenance (=deferred maintenance) are reasons for existence of serious problems, if not in the physical facilities, in the management of those facilities. Similarly deferred maintenance relates to O&M costs of facilities and rates , and managements' apparent avoidance of costs with increased risks/costs of failures for those in the lower portions of the sewerage network. P31-5

Before committing to an additional tunnel ending at White Point, geotechnical field studies must be done to determine whether this route can be built without impact.

p.ES-8.a PURPOSE AND NEEDS ...rely on two onshore tunnels...have not been inspected...due to their overall length, limited access, interconnections between the tunnels, and continuous flow through the tunnels. .flows...from these storm events nearly exceeded the capacity of the JWPCP ocean discharge system. If...damaged or the capacity of the ocean discharge system exceeded, treated JWPCP effluent would need to be bypassed into the Wilmington Drain...through Harbor Regional Park. If sufficient capacity were not available in the Wilmington Drain, the sewers tributary to the JWPCP could overflow and untreated wastewater could enter various water courses, such as the Dominguez Channel and the Los Angeles River. P31-6

ES-5a The DEIR and ES do not provide the relationship of Goal(s), Objectives, Purpose(s) and Needs nor their definitions.

ES-5b All risks of adverse effects from expected overflow problems are focused in the Carson-San Pedro area and not in the upper service areas (north of I-5) which have been in place for decades. This again demonstrates assignment of risks and adverse effects toward the lower and benefits in the upper services areas. The proposed Project is, in part only, aimed at reducing the risks to the communities from Carson southward which in

itself would benefit, reduce risks of overflows and malfunctions of the onshore outfall, while increasing the concentration of sludge processing and impacts for residents of the lower service areas. Assessment of benefits and impacts for the lower service areas' compared to upper service areas' is not provided in the DEIR. As indicated herein, the benefits and impacts must be quantified and balanced else wise "net-impact(s)" should be considered as significant. P31-6 cont

p.ES-8.b The **project purpose and needs** are to inspect and upgrade the aging ocean discharge system, to provide sufficient capacity in the JOS to accommodate the estimated 2050 peak wastewater flows, and to comply with all applicable water quality standards...prohibiting sewer overflows...Program evaluates both modifying the existing ocean discharge system and constructing a new ocean discharge system.

ES-6 These Project purpose(s) and needs (inspect/upgrade discharge-on/offshore) are not related to the Program and Project goals and objectives and the Program purpose(s) and needs. P31-7

Without clear and consistently applied definitions, the recommended project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-9 PROGRAM-WIDE ALTERNATIVES ANALYSIS AND RECOMMENDATIONS JOINT OUTFALL SYSTEM COMPONENT AREAS For the purposes of developing and evaluating **program-wide alternatives**, the JOS was divided into...: Wastewater Conveyance and Treatment WRP Effluent Management Solids Processing Biosolids Management JWPCP Effluent Management

ES-7a The proposed Program continues and emphasizes distinctions between the five-six WRPs (upper system) and the JWPCP area and again demonstrates assignment of benefits in the upper services areas and continues and increases effects of sludge management in the lower service areas. The five proposed Program elements predominately involve how to get increased sludge generation in the upper service areas down to JWPCP and disposal of treated effluent without recycling. As indicated above, the Program assigns treated WRP effluent for recycled irrigation, recharge, and streamflows to benefit the upper service areas, while sludge and other "non-compliant stream discharge" flows to the regional "sewers" also continues and increases upper sludge discharged for treatment in the JWPCP. P31-8

ES-7b The DEIR does not clearly provide adequate nor complete assessment of the sludge processing and differential focus of benefits/impacts for upper and lower service areas. Lower service areas do not receive benefits of recycling

ES-7c No alternatives are developed nor screened to increase in-door water conservation/sewage reduction in upper service areas and to reduce their liquids/sludge flows to and their impacts on the lower service areas and needs for new ocean outflows and risks of overflows.

Without clear and consistently applied definitions, the recommended project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-13 PROJECT-SPECIFIC ALTERNATIVES ANALYSIS AND RECOMMENDATIONS OCEAN DISCHARGE SYSTEM PROJECT ELEMENTS
...**purposes** of developing and evaluating project-specific alternatives, the...project was divided into...five elements based on primary functionality: JWPCP Shaft Site Onshore Tunnel Alignment Intermediate Shaft Site Offshore Alignment Diffuser Area.

ES-8a Project purposes, needs, goals, and objectives are not clearly defined. The Project alternatives have been developed without the simplest onshore outfall element alternatives: Straight Alignment from either the west JWPCP Shaft-to-Intermediate Royal Palms shaft or central JWPCP shaft-to-Royal Palms-to-Angels Gate shafts. P31-9

ES-8b No study in the DEIR provides an overall sewerage liquid/sludge conservation/management alterative for both upper and lower services' areas with an objective of say 10% reduction in WRP flows to JWPCP and 15% reduction in discharge to the Onshore Tunnel by 2030.

ES-8c No study in the DEIR provides an overall hydrological modeling, conducted to locate "best" marine water quality locations for 50-100% increased discharge by 2050.

Without clear and consistently applied definitions, the recommended project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-19 PROJECT-SPECIFIC RECOMMENDATIONS Alternative 4...highest-ranked **feasible** alternative and thus is the recommended project...maximum hydraulic capacity...accommodate the peak wastewater flows...for the year 2050.

ES-9 The Recommendations of the DEIR are based on the undefined "feasible" (technically, financially, administratively, etc.), and the ranking is based on undefined and unquantified goal(s), objectives, purpose(s), and needs without quantified criteria levels to assess feasible vs infeasible. P31-10

Without clear and consistently applied definitions, the recommended project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-22 Project Implementation Schedule The estimated implementation schedule for the **recommended project** is shown below. The actual schedule could vary depending on...considerations.

ES-10 No Program Schedule has been presented other than 2050 for all Program's projects in order to understand the relationship of the ocean discharge vs water conservation, improved recycling in the upper service areas, and eventual upgrading to advanced secondary or tertiary for recycling and reuse. P31-11

Without clear and consistently applied definitions, the recommended project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-24 ENVIRONMENTAL REVIEW In conformance...joint EIR/EIS...assess the environmental impacts of the **recommended plan**...identified in.. MFP Both program-wide and project-specific recommendations comprise each alternative. P31-12

ES-11 The only "recommended plan" (presumably the proposed Project or Recommended Alternative, Alternative 4) does not incorporate even a tentative program-wide projects'

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recommendations in order to understand and assess impacts of both the specific Project and others of the Program.

Without clear and consistent definition of the proposed Project, the recommended plan and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

P01-12 cont.

p.ES-24 CEQA Scope of Analysis The EIR... **Program** provides a **program**-level environmental assessment of the following **program** elements:

conveyance improvements, plant expansion, process optimization, WRP effluent management, solids processing, and biosolids management.

[p.ES-9 states program items - Wastewater Conveyance and Treatment, WRP Effluent Management, Solids Processing, Biosolids Management, JWPCP Effluent Management]

Because these elements would not be implemented in the **near future and/or the actual construction locations are unknown (e.g., sewer relief projects), the project specifics are too speculative for a detailed analysis.**

ES-12a The CEQA Program analysis can easily propose a "conceptual base-case" for one set of feasible "projects" which would serve the population of the service areas in 2050 and be integrated with the proposed Project from the JWPCP and seaward.

P01-13

ES-12b Even within the Executive Summary differences in Program elements differ as they do in the DEIR text - adding JWCP effluents, while lumping plant expansion and process optimization within joint Wastewater Treatment.

ES-12c No Program Schedule has been presented other than 2050 for all other projects in the Program, although a 2050 timeframe does not equal useful life of the Program or the Project projects. A "conceptual base-case" overall program and optimal feasible schedule can and should be provided.

Without clear and consistently applied definitions and a base-case program plan and schedules, the recommended project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-24 The EIR for the Clearwater Program provides a **project-level environmental assessment of the JWPCP effluent management project alternatives.** The alternatives are divided, for analysis: onshore tunnel alignment, offshore tunnel alignment, JWPCP shaft site, intermediate shaft site, and diffuser area.

ES-13a Please not that even on the same page (ES-11 - perhaps as WRP Effluent Management) and in the related sections of the DEIR, the classification of the proposed Project is not included as JWPCP Effluent Management (ES-9) in the initial portion of the ES section.

ES-13b The Project alternatives have been developed without the simplest onshore outfall element alternatives: Straight Onshore Tunnel Alignment from either the west JWPCP shaft-to-Intermediate Royal Palms shaft or central JWPCP shaft-to-Royal Palms-to-Angels Gate shafts.

P01-14

ES-13c The Project alternatives have been developed without delineation of the best offshore diffuser areas with existing and future discharges and the marine and maritime environments offshore of Royal Palms or Angels Gate. Other sections and appendices of the DEIR do not start from the basic premise of locating the best-case area for treated

sewage diffusion and then working back to onshore facilities all of which maybe within 10-15% of the total length of the recommended Alternative 4.

ES-13d The Project also includes elements upstream of the effluent system but related to the current and future flows through the JWPCP effluent system alternatives. P31-14 cont

Without clear and consistently applied definitions, the recommended project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-24 Prior to approval of any future projects related to the **program elements**, the environmental impacts would be **reassessed, and appropriate environmental documentation** would be prepared at that time.

ES-14 Given the lack of definitive future Program projects, their schedules, and integration with the recommended Project, no other project should be considered to be included in this Programmatic EIR and future project must be separately assessed within Supplemental EIRs at the least. P31-15

Without clear and consistently applied definitions, the recommended project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-27 SIGNIFICANT UNAVOIDABLE IMPACTS *[Project]*

ES-15 Most if not all of the identified significant adverse effects of the Program and recommended alternative (No.4) can be further mitigated or compensated by existing technologies and changes in designs and may be reduced sufficiently so as to eliminate significant unavoidable impacts. As an example, an alternative onshore tunnel alignment would avoid the more circuitous alignment of Alternative 4 and reduce anticipated alignment impacts by 10-20%. Other alternative mitigation and/or compensatory measures will be provided as appropriately below. P31-16

Without consideration of a direct onshore alignment, screening and recommendation of an effluent project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-28 Air Quality Significant and unavoidable peak day air quality impacts would occur at a regional level...would exceed the Southern California Air Quality Management District daily significance thresholds for construction-related emissions **before mitigation**.

ES-16 Construction emissions for tunneling can be greatly reduced by alternative electrical or LPG/CNG powered and slurry-line systems compared to the diesel fuelled "locomotives". The JWPCP facilities currently do dewatering and have staff experience and facilities and thereby can deal with dewatering in a more efficient manner. P31-17

Without consideration of alternative conveyance systems for tunnel debris, the recommendation of an effluent project (Alt.4) and assessments of unavoidable and significant impacts thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-28 Specifically,..Alternatives 1, 3, and 4 would exceed thresholds for volatile organic compounds (VOC) and nitrogen oxides (NOX)...Although mitigation would reduce emissions, impacts would remain significant for NOX for all alternatives...significance is **directly related** P31-18

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to the length of the alignment, the **duration of construction**, and the **overlap of elements during construction**...Alternative 4 has the smallest emissions contribution of the four alternatives and would be the preferred alternative based on air emissions.

ES-17 Construction emissions for tunneling can be greatly reduced by alternative direct tunnels rather than those proposed and recommended. Additional alternative onshore and offshore tunnel alignments can further reduce emissions below those of considered alternatives and changes in conveyance system can greatly reduce the emissions.

Without consideration of alternative alignments and conveyance systems, assessments of unavoidable and significant impacts thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-28 Cultural Resources **Significant and unavoidable impacts on paleontological resources would occur during construction**...rock face being removed during onshore and offshore tunnel construction **could not be observed** for the presence of paleontological resources; thus, if present, paleontological resources would be destroyed by the TBM. Likewise, at a certain depth, paleontological resources may be encountered during construction at the shaft sites; these resources could not be observed and, if present, would also be destroyed...relatively equal across the alternatives...more paleontological resources would be encountered in the longer alignments...based on alignment length. Alternative 4 would be the preferred alternative with regard to paleontological resources based on alignment length.

ES-18a Construction impacts on fossils can be greatly reduced by:

- *Early geotechnical sampling, analyses, and reporting for shafts and tunnel alignments.*
- *Geological investigations to establish most-likely locations to encounter fossils prior to construction*
- *Site/Locations identification as to probable fossiliferous locations based on stratigraphy and drilling information*
- *Sampling, analyses, and reporting fossiliferous deposits encountered during excavations*
- *Develop/operate sampling systems for shaft and slurry/debris from tunneling excavations*

ES-18b DEIR preparer does not recognize what fossils are. Fossils include foraminifera, diatoms, shells, and bones but the assessment appears to be focused on "bones".

Without consideration of all fossils and of many opportunities that paleontologists have implemented, the assessment appears to be totally inadequate and incomplete which in turn assigns unavoidable and significant impacts when in fact such impacts can be mitigated to below significance levels and the DEIR must be revised and recirculated.

p.ES-29 Employment, Housing, Socioeconomics, and Environmental Justice Under NEPA, **significant and unavoidable environmental justice impacts** would occur during construction of...JWPCP East shaft site would result in environmental impacts that are disproportionately high and adverse on minority and low-income populations.

ES-19 Further mitigation and compensation can be implemented to reduce the significant effects of construction and should be combined with current and ongoing environmental justice impacts from existing and proposed facilities and the overall program bias toward protecting the upper service areas and impacting the lower service areas and Carson

Without clear and consistently applied definitions, the recommended Program and Project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated. P31-20 cont

p.ES-30 SIGNIFICANT IMPACTS AND MITIGATION MEASURES (PROGRAM-WIDE) ***[Tables]***

p.ES- AQ

p.ES- CR

p.ES-33 **EMPLOYMENT, HOUSING, SOCIOECONOMICS, AND ENVIRONMENTAL JUSTICE2**

Impact SOC-3. Would Program result in environmental impacts that are disproportionately high and adverse on minority and low-income communities P31-21

p.ES-46 EMPLOYMENT, HOUSING, SOCIOECONOMICS, AND ENVIRONMENTAL JUSTICE

Impact SOC-3. Would Alternatives...result in environmental impacts that are disproportionately high and adverse on minority and low-income populations?

Carson vs other treatment facilities - Solids/Sludge treatment

ES- The Project alternatives have been developed without the simplest onshore outfall element alternatives: Straight Alignment from either the west JWPCP shaft-to-Intermediate Royal Palms shaft or central JWPCP shaft-to-Royal Palms-to-Angels Gate shafts.

Without clear and consistently applied definitions, the recommended Program and Project and assessments therefrom cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.ES-34 **SIGNIFICANT IMPACTS AND MITIGATION MEASURES (PROJECT-SPECIFIC)** ***[Tables]***

MM AES-3a. Implement **visual measures** to improve the aesthetic quality of the noise barrier to ensure the design blends with the surrounding environment...During the final design process, the input of residents and/or recreationists that will be affected by the placement of the noise barriers **will be accepted**. Their comments will be **evaluated for inclusion** in the design to ensure the final treatment **meets expectations to the greatest extent feasible.** P31-22

ES- The Project alternatives have been developed without the simplest onshore outfall element alternatives: Straight Alignment from either the west JWPCP shaft-to-Intermediate Royal Palms shaft or central JWPCP shaft-to-Royal Palms-to-Angels Gate shafts.

p.MFP6.1/189 **Chapter 6 ALTERNATIVES ANALYSIS 6.1 Introduction**

...overall **goal**...is to ***identify a recommended plan*** *that*

is ***protective of public health*** *and*

will best ***meet the needs of the Joint Outfall System (JOS) through the year 2050***

in a ***cost-effective*** *and* ***environmentally sound manner***. P31-23

Recommendations consist of
system improvements, upgrades, and expansions
to accommodate projected future conditions within the service area.
The future conditions...include
anticipated growth within the system,
an aging infrastructure,
emerging demands for recycled water, and
potential new regulatory requirements.

P31-23 cont

MFP definition of a single overall Project goal of "identify a recommend plan" is totally inadequate and incomplete for the proposed Project and its relationship to the Program.
Without clear and consistently applied Goals, objectives, and quantification for the recommended Program and Project and assessments thereof the DEIR and MFP cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

6.1.2 Planning Objectives The MFP...ensure adequate JOS wastewater system capacity, reliability, sustainability, and compliance...2050...recommended plan in the MFP...following objectives:
Provide adequate system capacity to meet the needs of the growing population
Provide for overall system reliability by allowing for the inspection, maintenance, repair, and replacement of aging infrastructure
Provide support for emerging recycled water reuse and biosolids beneficial use opportunities
Provide a long-term solution for meeting water quality requirements set forth by regulatory agencies

P31-24

MFP use of identical objectives for a recommend plan is totally inadequate and incomplete for a specific proposed Project.
Without clear and consistently applied quantification objectives, the Project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.MFP6-2 6.1.5.1 Program Versus Project...*program*...options or alternatives that are broad in nature and do not have a high level of detail...implemented in the long term.
project...a specific component of the comprehensive plan...in the short term, and a greater level of detail is required for its analysis in the MFP and the associated EIR/EIS.
...program...continuation of...current biosolids management practices...2050 planning horizon...project...a new or modified ocean discharge system...next 10 years...address the effluent management needs of the JWPCP.
MFP use of identical objectives for a recommend plan would require that the Program and Project have identical systems and facilities but the proposed Project represents a totally inadequate and incomplete for a specific proposed Project.
Without clear and consistently applied quantification objectives, the Project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

p.MFP6-58 6.4.3 Identification of Recommended Plan ...alternatives consist of program and project aspects...identical in all aspects except for...JWPCP effluent management...Alternative

4...is the **recommended plan alternative**...program and project elements of the **recommended plan** are:

Wastewater Conveyance and Treatment – CT 2A: Expansion at the SJCWRP; Process Optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; and Additional Conveyance Capacity ***(same in all 4)***

Solids Processing – SP 1A: Centralized Processing at the JWPCP ***No changes***

Biosolids Management – BM 1: Current Practices: Beneficial Use/Landfill ***No changes***

WRP Effluent Management – WE 1: Use of Current Effluent Management Systems ***No changes***

JWPCP Effluent Management – JE 3: Figueroa... – Royal Palms (JWPCP West [working shaft]; ..to Royal Palms Beach [exit shaft]); and Rehabilitation of the Existing Ocean Outfalls...

MFP use of identical objectives for a recommend plan would require that the Program and Project have identical systems and facilities but the proposed Project represents a totally inadequate and incomplete for a specific proposed Project.

Without clear and consistently applied quantification objectives, the Project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

P31-24

p.MFP7-1/263 The five major program component areas are:

Wastewater conveyance and treatment
Solids processing
Biosolids management
Water reclamation plant (WRP) effluent management
JWPCP effluent management

...recommended program-level improvements are wastewater conveyance and treatment, solids processing, biosolids management, and WRP effluent management...area with recommended project-specific improvements is JWPCP effluent management.

MFP use of identical objectives for a recommend plan would require that the Program and Project have identical systems and facilities but the proposed Project represents a totally inadequate and incomplete for a specific proposed Project.

Without clear and consistently applied quantification objectives, the Project and assessments thereof cannot be considered as complete and adequate and the DEIR must be revised and recirculated.

1 Introduction

2 Existing Facilities

P31-25

3 Alternatives Description

Program Alternatives do not include major building water conservation measures and recycling of effluent in the lower service areas. Apparently higher salts levels in lower

service areas could reflect high inflow and leakage which should be a major conservation/process-reduction measures.

Alternative 4 (Project) doesn't appear to be the best/shortest distance alternative, straight line alternative reduces length and associated impacts by 15+%. "Preferred" alternative should be dead straight line and deeper to the existing header perhaps with additional overflows between the existing onshore outfalls and the new one.

P31-25 cont

5 Air Quality p.5-26 **Locomotives Used During Tunneling Activities** Small, mining-type locomotives would be used to convey excavated material and personnel in rail cars through the tunnel alignments. Emissions from these diesel-powered locomotives were quantified using 5-27 EPA Tier 2 off-road diesel emission standards...were calculated based on the sulfur content of California diesel fuel of 15 ppm...assumed that up to 5 locomotives could operate simultaneously.

P31-26

Traffic, odors, and air emissions impacts can be mitigated by a pressure-balancing rotating TBM-shield can use electric powered slurry line systems and a muck-dewatering at the JWPCP with odor control and dewatering systems. Similarly all tracked conveyance could use LPG or electric drive locomotives.

p.5-108 **5.4.6 Alternative 4 (Recommended Alternative)** Alternative 4 (Program) is the same as Alternative 1 (Program). The impacts for the JWPCP West shaft site for Alternative 4 (Project) would be the same as for Alternative 3 (Project). Alternative 4 (Project) includes a shaft site at Royal Palms Beach. The impacts for the existing ocean outfalls would be the same as for Alternative 1 (Project).

Alternatives do not include major building water conservation measures and recycling of effluent in the lower service areas. Apparently higher salts levels in lower service areas could reflect high inflow and leakage which should be a major conservation/process-reduction measures.

P31-27

Alternative 4 doesn't appear to be the best/shortest distance alternative, straight line alternative reduces length and associated impacts by 15+%. "Preferred" alternative should be dead straight line and deeper to the existing header perhaps with additional overflows between the existing onshore outfalls and the new one.

7 Cultural Resources (Terrestrial and Marine)

22.4.1.3 Cultural Resources Significant and unavoidable impacts on paleontological resources...The rock face...could not be observed for the presence of paleontological resources...paleontological resources would be destroyed by the tunnel boring machine. Likewise, at a certain depth, paleontological resources may be encountered during construction at the shaft sites; these resources could not be observed and, if present, would also be destroyed. Impacts are relatively equal across the alternatives...in the longer alignments; thus, Alternatives 3 and 4 are preferred over Alternatives 1 and 2 based on alignment length.

P31-28

*7- **The Project alternatives have been developed without the simplest onshore outfall element alternative: Straight Alignment from either the west JWPCP shaft-to-Intermediate Royal Palms shaft or central JWPCP shaft-to-Royal Palms-to-Angels Gate shafts.***

Alternative 4...preferred alternative with regard to paleontological resources based on alignment length.

7- ***The Project alternatives have been developed without the simplest onshore outfall element alternatives: Straight Alignment from either the west JWPCP shaft-to-Intermediate Royal Palms shaft or central JWPCP shaft-to-Royal Palms-to-Angels Gate shafts.*** P31-20 cont

8 Geology, Soils, and Mineral Resources

The Program facilities and proposed improvements of sewerage systems depend on a basic functional concept and related facilities - sludge is separated but not treated in the upper WRPs and is conveyed through onshore transmission sewers to the JWPCP facilities for treatment. Such concentration of sludge treatment and disposition places the entire sewerage system at risk from seismic and fault rupture due to the transit of sewers and sludge conveyance crossing numerous fault zones. This risk of significant environmental effects is not discussed in this Chapter 8. P31-78

Similarly risk of sludge handling disruption by seismic events and perhaps fault ruptures and damages to facilities is not assessed for the concentration of most if not all sludge processing in the JWPCP within an active fault zone.

Assessment of impacts for damage to sewerage facilities does not reflect effects of differential movement of large facilities (e.g., manholes, access-shafts, pump stations) and their interconnecting pipelines for both Program and Project level, and the differential movement of buried shafts and tunnels and connections with exposed or ballasted surface structures.

8.2.1.5 Non-Seismic Geologic Hazards – Subsidence

Measured ground subsidence occurs in areas where groundwater extraction, oil production, or other mining activities have lowered the ground surface...**Artificial recharge has managed the problem.**

The Project alternatives have been developed without the simplest onshore outfall element alternatives: Straight Alignment from either the west JWPCP shaft-to-Intermediate Royal Palms shaft or central JWPCP shaft-to-Royal Palms-to-Angels Gate shafts.

No locations/areas of subsidence are shown to relate to the proposed Project Alternatives nor the Program Alternatives. P31-80

No documentation for this statement is provided or referenced regarding artificial recharge successes and return of ground surface to original levels.

No consideration is given to significant changes in the Wilmington and Long Beach Oil Fields.

Boundary maps of oil fields and areas of >1ft historic subsidence and current residual subsidence of >1ft are not provided as part of Setting nor Assessment. No well-head, casing path, and well toes within 6000ft of the proposed Alternative 4 route.

8.2.3 Project Setting 8.2.3.1 Tunnel Alignment

Figure 8-2 **Tunnel Depths** ***[In-Plan -colored-segments rather than In-Section]***

Figure 8-3a **Map of Stratigraphic Relationships for Proposed Tunnel Alignments** ***[Surface geology]*** P31-21

Figure 8-**4 Generalized Geological Cross Section** ***[Scale >2000ft, while maximum depth is 200ft]***

Alternatives are not shown in reasonable scaled-sections; the plan alignments with colored segments do not relate the alignments with the geological settings through which Project tunnel alternatives would pass.

As tunnels, the surface geology does not provide adequate setting of the actual vertical tunnel alignment with respect to surface geological conditions. P31-51 cont

Without such comparative depiction, no adequate assessment and meaningful comments can be made with regard to the risks of each alternative with the geological conditions of the ground responses to seismic tremors (e.g., depths of materials and length of tunnel susceptible to liquefaction.

8.2.3.1 Tunnel Alignment Table 8-7. Geologic Inventory of Hazards Along Tunnel Alignments Sources: a Parsons 2011; b CDMG 1998e; c CDMG 1998f;

8.2.3.2 Shaft Sites Table 8-8. Geologic Inventory of Shaft Sites CDMG 1998f; d Parsons 2011;

Several liquefaction zones for shafts referencing CDMG rather than Parsons, while in alignments reference is only given for Parsons and no liquefaction zones are identified.

Discussions of shafts and their geological character can not be related to the colored geological sections provided. P31-52

Alternatives 1-3 includes outfall segments, while Alternative 4 uses existing diffuser sections, and no geological sections and settings are provided.

The above referenced sections are contradictory, totally inadequate and incomplete, and cannot provide the basis for an objective description of the project setting and potential impacts that may arise.

13 Marine Environment

p.13-42 13.4 Environmental Impacts and Mitigation Measures 13.4.1 Methodology and Assumptions

This section evaluates environmental impacts resulting from both the construction and operation of the project for each alternative. The primary project activities that could potentially affect the marine environment are:

Construction of a riser
Construction of a diffuser
Improvements to existing ocean outfalls
Operation of the new ocean discharge system

All of the program elements are located outside the marine environment; **some of the project elements** are located within the marine environment. Only...within the marine environment are discussed in the analysis. P31-53

p.13-132 13.4.6 Alternative 4 (Recommended Alternative) 13.4.6.1 Program Alternative 4 (Program) does not include marine elements and, therefore, has **no potential to have an impact on the marine environment**.

As all Program Alternatives have two central elements: sludge disposition and effluent disposition via JWPCP and all use ocean discharge for a near doubling of discharge of secondary-treated effluent, operations all Program alternatives. Program alternatives do not include intensive recycling of effluent and on-land disposition of effluent, and therefore all program alternatives impact the marine environment.

The Marine Environment Setting and Assessment does not identify the optimum location within San Pedro Bay for discharge and diffusion of a near-doubling of secondary treated effluent although it is widely restricted from any irrigation or recharge within the service areas of the JOS.

The Marine Environment Setting and Assessment are totally inadequate and incomplete and cannot provide the basis for an objective description of the project setting, program and project alternatives, and potential impacts that may arise within the marine environment.

P31-33 cont'd

p.13-46 13.4.1.2 Furthermore, the impact analysis for operation assumes the following:...The physical characteristics of the effluent released on the SP Shelf and PV Shelf would be the same as the existing effluent characteristics despite any change in location or change in depth of release...

p.13-133 13.4.6.2 Project The construction impacts for the rehabilitation of the existing ocean outfalls for Alternative 4 (Project) would be the same as for Alternative 1 (Project). Operational impacts would be the same as baseline conditions; therefore, there would be no operational impacts for the existing ocean outfalls under Alternative 4 (Project)..

As the DEIR-Project does not locate within the Marine study area the optimal location for discharge and diffusion of a doubling of the treated effluent load, the assessment appears to be bias to justifying the existing discharge area for a doubling of existing nutrient and freshwater daily loads. The discharge characteristics are simply assumed to be identical to those at present although with the current and future anticipated water recycling and conservation characteristics can be assumed to change perhaps in those elements which may not be regulated through the current secondary treatment requirements for discharge, e.g., salts, boron, chemicals of concern, TPH, etc.). The Marine Environment Setting and Assessment does not identify the optimum location within San Pedro Bay for discharge and diffusion of a near-doubling of secondary treated effluent although it is widely restricted from any irrigation or recharge within the service areas of the JOS.

P31-34

The Marine Environment Setting and Assessment are totally inadequate and incomplete and cannot provide the basis for an objective description of the project setting, program and project alternatives, and potential impacts that may arise within the marine environment.

15 Employment, Housing, Socioeconomics, and Environmental Justice

p.15-18 Environmental Justice. The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. (EPA 2004:Section 2.2.)

p.15-22 15.3.3.2 South Coast Air Quality Management District In 1997, the South Coast Air Quality Management District (SCAQMD) adopted a set of guiding principles on environmental justice...initiatives led to the SCAQMD Board's approval of the 2003–2004 Environmental Justice Workplan. SCAQMD intends to update this as needed to reflect ongoing and new initiatives..."right to equal protection from air pollution and fair access to the decision making process that works to improve the quality of air within their communities."..."...equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution."

P31-35

p.15-23 15.3.4.1 General Plan of the City of Los Angeles Environmental Justice...adopted environmental justice policies as outlined in its framework and transportation elements; these policies are summarized in this section. The framework element is a "strategy for long-term growth which sets a citywide context to guide the update of the community plan and citywide elements."...policy to "assure the fair treatment of people of all races, cultures, incomes and education levels with respect to the development, implementation and enforcement of environmental laws, regulations and policies, including affirmative efforts to inform and involve environmental groups, especially environmental justice groups, in early planning stages through notification and two-way communication."

...Compact for Environmental Justice, which was adopted by the City's Environmental Affairs Department as the City's foundation for a sustainable urban environment. Statements relevant to the proposed project include the following: P31-35 cont

> All people in Los Angeles are entitled to equal access to public open space and recreation, clean water, and uncontaminated neighborhoods.
>
> All planning and regulatory processes must involve residents and community representatives in decision making from start to finish.

p.15-46 Environmental justice impacts would be considered indirect impacts with respect to the Corps' NEPA scope of analysis described in **Section 3.5.**

As indicated elsewhere, the JOS service areas of are clearly not treated identically and the upper service areas are not subject to the same potential risks of sludge treatment and treated effluent malfunctions as those south of I-5, the lower service areas. Similarly the upper service areas receive the benefits of higher level treated recycled irrigation water that are not provided to residents and ratepayers in the lower service areas.

Therefore, the DEIR contains contradictory, totally inadequate and incomplete, assessment of environmental justice issues and without specific mitigation the effects must be considered as significant.

22 Comparison of Alternatives 22.2.1 CEQA Requirements

The CEQA requirements for the evaluation of alternatives...an EIR present a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the **basic project objectives** but would avoid or substantially lessen any significant effects of the project...requires an evaluation of the comparative merits of the alternatives. An EIR is not required to consider alternatives that are infeasible.

Elsewhere in the comments, alternatives and mitigation have been proposed which have not been considered and which cannot be considered infeasible without incorporating more environmental justice issues:

P31-36

a. ***Full recycling of advanced treated effluent from and local sludge disposition systems for all service areas***
b. ***Onshore outfall along a straight line from JWPCP to the Royal Palms Header;***
c. ***Slurry pipeline from EPB-TBM to JWPCP;***
d. ***Marine disposal site based on the most favorable (optimal) location for discharge and diffusion of a doubling of current loads;***
e. ***Screening and sampling of paleontological materials from slurry or cart conveyed systems***

Without fuller review of alternatives, the program and project DEIR cannot be considered adequate and/or complete.

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23 Significant Irreversible Impacts - 23.2 Analysis of Irreversible Changes

p.23-1 - 2 The tunnel boring...could damage or destroy unknown, unique paleontological resources...as discussed in Chapter 7...would be significant and irreversible...other significant impacts...would not be irreversible.

...Alternative 4 **would result** in significant irreversible changes...**could result** in significant irreversible damages to paleontological resources during construction...commitments and damages would occur in accordance with the Clearwater Program...significant irreversible changes...**deemed acceptable in light of the Clearwater Program's overall benefits**. F21-37

As indicated elsewhere, mitigation of paleontological impacts exists but the assessment has centered entirely on those remains which would be >1in in diameter, while significant paleontological resources and information are gathered and used for every drilling operation for gas and oil in Los Angeles County and even within the onshore and marine environment of the Project.

Without fuller review of available mitigation, the program and project DEIR's assessment of irreversible impacts cannot be considered adequate and/or complete.

We respectfully submit these comments.

Charming Evelyn
Chair, Water Committee
Sierra Club Angeles Chapter

Response to Comment P31-1

The comment recognizes the need for an additional effluent tunnel between the Joint Water Pollution Control Plant (JWPCP) and the ocean to allow for the inspection and repair of the existing effluent tunnels and to provide additional hydraulic capacity for peak flows associated with significant flow events. The comment also states that the draft Master Facilities Plan (MFP) did not sufficiently discuss how implementation of the Clearwater Program would result in recycled water becoming a significant local water resource. The comment further states that the draft EIR/EIS was inadequate in meeting California Environmental Quality Act (CEQA) requirements and the draft Executive Summary was based on an inadequate and incomplete environmental assessment.

The Sanitation Districts of Los Angeles County (Sanitation Districts) concur that a new effluent tunnel between the JWPCP and ocean is necessary. However, the Sanitation Districts strongly disagree with the assertion that the draft MFP did not sufficiently recognize the significant role that recycled water serves as a local water resource. As presented in Chapter 1 of the draft MFP and Chapter 1 of the draft EIR/EIS, one of the four primary objectives of the Clearwater Program is to "provide support for emerging recycled water…opportunities." As further described in Chapter 1 of the draft MFP, the Sanitation Districts have pioneered water reclamation and reuse in Southern California, beginning with the completion of the Whittier Narrows Water Reclamation Plant in 1962. The Sanitation Districts own and operate 10 water reclamation plants (WRPs) that produce approximately 165 million gallons per day (MGD) of high-quality recycled water. Approximately half of the recycled water is reused at over 640 sites throughout Los Angeles County. Eight of these WRPs, located in the Joint Outfall System (JOS), intercept and treat the more reclaimable wastewater flow that would instead be treated at the JWPCP and discharged to the ocean. The tertiary-treated effluent produced at the JOS WRPs essentially meets drinking water standards and is used for groundwater replenishment (i.e., indirect potable reuse) and other important uses, including industrial, commercial, and recreational applications; habitat maintenance; and agricultural and landscape irrigation. Assuming this water would otherwise have been supplied by imported water, the Sanitation Districts' recycled water programs have avoided approximately 250,000 megawatt hours of annual power consumption, offsetting 73,000 metric tons of carbon dioxide equivalents.

It is not clear how the commenter reached the conclusion that the Clearwater Program would result in an additional 165 MGD of recycled water. The current combined permitted treatment capacity of the six JOS WRPs is 193 MGD. To accommodate the projected wastewater flows for the year 2050, the Sanitation Districts are proposing an expansion at the San Jose Creek Water Reclamation Plant (SJCWRP) that would result in the ability for the JOS to produce an additional 25 MGD of recycled water.

The comment did not specify how the draft EIR/EIS was inadequate in meeting CEQA requirements, or how the draft Executive Summary was inadequate and incomplete. Overall, the Clearwater Program documents were prepared in accordance with State Revolving Fund loan and CEQA/National Environmental Policy Act (NEPA) requirements.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-2

The comment states that the draft EIR/EIS did not adequately address environmental justice impacts on the lower service area residents near the JWPCP. The comment suggests that the absence of sludge management/solids processing and the abundance of cost-effective recycled water in the upper service

areas provided residents in these areas with advantages not available to residents in the lower service areas.

An analysis of environmental justice impacts is required under NEPA, in accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. CEQA does not require an analysis of environmental justice impacts. Because only the project elements of the Clearwater Program are subject to NEPA, the program elements did not require an analysis of environmental justice impacts. The required environmental justice analysis to comply with NEPA was presented in Chapter 15 of the draft EIR/EIS.

Regardless, implementation of the Clearwater Program would not disproportionately concentrate the risk of treated-effluent discharges into the Wilmington Drain or sewer overflows in the lower portion of the JOS. On the contrary, as stated in the purpose and needs statement, Alternative 4 (the recommended alternative) would benefit the San Pedro community by reducing the potential of discharges to the Wilmington Drain or overflows from the sewers tributary to the JWPCP. Section 6.2.3 of the draft MFP, which provided an analysis of options/alternatives for solids processing, determined that processing at the source plants would not be feasible. Furthermore, the solids produced by the upstream WRPs and returned to the sewers for treatment at the JWPCP would constitute less than 2 percent of the JWPCP influent flow. The biosolids produced would be managed at remote locations, and, because centralized solids processing is more cost-effective, rates would be lower throughout the JOS service area. Also, approximately two-thirds of the recycled water that would be reused in the JOS would replenish the regional groundwater basins (i.e., the Central Basin, which is hydraulically connected to the West Basin) thus providing a benefit to the entire lower service area. Recycled water from the Long Beach Water Reclamation Plant is reused at the Alamitos Seawater Barrier to prevent salt water intrusion into the groundwater of the lower service area

Section 6.2.5.1 of the draft MFP, which provided an analysis of options and alternatives for WRP effluent management, determined that complete reuse at the upstream WRPs would not be feasible. The draft MFP also explored the possibility of providing advanced treatment (such as microfiltration/reverse osmosis, ultraviolet disinfection, and advanced oxidation) at the JWPCP. Specifically, Section 6.2.6 of the draft MFP analyzed the feasibility of diverting enough flow from the existing JWPCP ocean discharge system to allow for the inspection and repair of each of the existing tunnels (Option JE 4 Reduced Ocean Discharge). To accommodate reuse and storage of the required 200 MGD of diverted flow, advanced treatment would be necessary. This reduced ocean discharge option specifically contemplated diversion of this advanced-treated effluent to the Central, West Coast, and/or Main San Gabriel Basins for groundwater recharge (i.e., indirect potable reuse). However, the reduced ocean discharge option was determined to be not viable for reasons presented in Section 6.2.6.5 of the draft MFP and thus was not further evaluated in the draft EIR/EIS.

Specific to this comment, the draft EIR/EIS was adequate.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-3

The comment states that the goal and objectives of the Clearwater Program provided in the draft Executive Summary and draft EIR/EIS were inadequate and/or incomplete.

The comment defines objectives differently than defined for CEQA. According to CEQA, an EIR requires a “statement of the objectives sought by the proposed project,” which will “help the Lead

Agency develop a reasonable range of objectives to evaluate in the EIR…." CEQA also states that the objects should include "the underlying purpose of the project." (CEQA Guidelines 15124[b].)

The NEPA equivalent to CEQA-required objectives is the purpose and need statement, which is defined under NEPA as a statement that briefly specifies "the underlying purpose and need to which the agency is responding in proposing the alternatives…" (40 CFR 1502.13.)

Neither CEQA nor NEPA require "shorter term, dated and quantitative expected/planned achievement," which the comment defines as objectives.

Chapter 1 of the draft MFP, Chapter 1 of the draft EIR/EIS, and the draft Executive Summary each provided a broad, qualitative goal statement for the Clearwater Program, as well as a set of specific objectives for meeting the goal. These documents further elaborated on the objectives immediately after they were listed. A reasonable range of program-wide and project-specific alternatives was systematically analyzed in Chapter 6 of the draft MFP, and those that could feasibly meet the overall goal and underlying objectives of the Clearwater Program were further analyzed in the draft EIR/EIS. Note the goal and underlying objectives of the Clearwater Program were shared with agencies and the general public throughout the public outreach process, including coordination meetings held with the Sierra Club in January 2008 and July 2011. Agency and public feedback during the public outreach process, which generally was very supportive, were considered in the development of the Clearwater Program's goal and objectives. Furthermore, the goal and objectives in the draft EIR/EIS were consistent with the requirements of CEQA and NEPA.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-4

The comment states that the goal and objectives of the Clearwater Program as provided in Appendix 1-A of the draft EIR/EIS were inadequate and/or incomplete.

See Response to Comment P31-3 for the correct definition of objectives under CEQA and purpose and need under NEPA. Neither CEQA nor NEPA require objectives or the purpose and need to be based on "scheduled and quantitative parameters and criteria," as requested by the comment.

The goal and underlying objectives of the Clearwater Program provided in Appendix 1-A of the draft EIR/EIS were consistent with those provided in Chapter 1 of the draft MFP, Chapter 1 of the draft EIR/EIS, and the draft Executive Summary. Appendix 1-A consisted of a preliminary screening analysis, the purpose of which was to evaluate potential environmental impacts and identify those that would result in no impact or a less than significant impact so that the draft EIR/EIS could focus on potentially significant impacts.

Providing adequate system capacity and providing overall system reliability were the first-stated and second-stated objectives of the Clearwater Program, respectively. Therefore, Chapter 6 of the draft MFP appropriately considered capacity and reliability when identifying a reasonable range of alternatives that could feasibly meet the overall goal and underlying objectives of the Clearwater Program.

The goal and objectives in the draft EIR/EIS were consistent with the requirements of CEQA and NEPA.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-5

The comment takes issue with the discussion of the aging infrastructure objective in the draft Executive Summary. The comment also states that additional geotechnical studies should be conducted before committing to a new tunnel that terminates within the White Point area as proposed under Alternative 4 (the recommended alternative).

In an effort to ensure that readers would fully understand the meaning and context of the Clearwater Program objectives provided in Chapter 1 of the draft MFP, both Chapter 1 of the draft EIR/EIS and the draft Executive Summary included further elaboration on the objectives immediately after they were listed. It is not clear why the comment takes issue with this approach. For example, the word "philosophy" applied to the Sanitation Districts as an organization, not the field of engineering, and the word "aging" was specifically used in the second objective listed.

As discussed in Section 8.4.1 of the draft EIR/EIS, the geology, soils, and mineral resources impact analysis was based on literature review, available geological data, geotechnical studies conducted by Fugro West, and a feasibility report prepared by Parsons. Mitigation Measure (MM) GEO-1, MM GEO-2, MM GEO-3, MM GEO-4, and MM GEO-6a all require further site-specific geotechnical studies during the final design phase of the project and prior to construction.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-6

The comment states that the project purpose, needs, goals, and objectives provided in the draft Executive Summary and draft EIR/EIS were not clearly defined. The comment further states that the risk associated with sewer overflows were disproportionately concentrated in the lower portion of the JOS.

As previously discussed in Response to Comment P31-3, Chapter 1 of the draft MFP, Chapter 1 of the draft EIR/EIS, and the draft Executive Summary each provided a broad, qualitative goal statement for the Clearwater Program, as well as a set of specific objectives for meeting the goal. These documents further elaborated on the objectives immediately after they were listed and, pursuant to NEPA, described the project purpose and needs.

As previously discussed in Response to Comment P31-2, implementation of the Clearwater Program would not disproportionately concentrate the risk of sewer overflows or the responsibility of solids processing in the lower portion of the JOS. As stated in the purpose and needs statement, the recommended project alternative (Alternative 4) would benefit the San Pedro community by reducing the potential of overflows from the sewers tributary to the JWPCP. Additionally, centralized solids processing would facilitate lower rates throughout the JOS service area. Furthermore, as described in Section 5.2.4 of the draft MFP, the most effective means of minimizing potential overflows would be through proper conveyance system management practices, including the relief of hydraulic capacity constraints. Under the Clearwater Program planning effort, a conveyance system needs assessment was conducted, the results of which were provided in Section 5.9.1 of the draft MFP. As described in Chapter 7 of the draft MFP, the Sanitation Districts proposed construction of approximately 33 miles of Joint Outfall relief trunk sewers. Overall, based on the information provided in the draft MFP, implementation of the recommended plan would result in a beneficial impact on the lower services areas with respect to reducing potential sewer overflows.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-7

The comment states the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because the project-specific purpose and needs were not related to the Clearwater Program goal and objectives and the program-wide purpose and needs.

See Response to Comment P31-3 for the correct definition of purpose and need under NEPA.

As described in Chapter 1 of the draft MFP, Chapter 1 of the draft EIR/EIS, and the draft Executive Summary, the Clearwater Program comprises program-wide and project-specific elements. The project elements are subject to NEPA because they require federal permits from the U.S. Army Corps of Engineers. Conversely, the program elements are not subject to NEPA because they do not require federal permits. Therefore, the statement of purpose and needs, which is provided pursuant to NEPA, only applies to the project. The project purpose and needs statement is provided in Section 1.4.2 of the draft MFP, Section 1.1.2.3 of the draft EIR/EIS, and the draft Executive Summary. The statement of purpose and needs is consistent with the Clearwater Program goal and objectives provided in Chapter 1 of the draft MFP, Chapter 1 of the draft EIR/EIS, and the draft Executive Summary. The need component is typically understood to be the larger and more general objective, whereas the purpose component is a specific objective that supports the larger objective. Section 1.1.2.3 of the draft EIR/EIS stated that "the project purpose and needs are to inspect and upgrade aging infrastructure, to provide sufficient capacity to accommodate projected 2050 flows, and to comply with all applicable water quality standards." Furthermore, Section 1.1.2.3 of the draft EIR/EIS stated, "to meet these needs, the Sanitation Districts propose to either modify the existing ocean discharge system or construct a new ocean discharge system." Therefore, the overall purpose of modifying the existing ocean discharge system or constructing a new ocean discharge system is in support of the need to inspect the existing tunnels and accommodate projected flows. As such, the draft EIR/EIS evaluated the impacts of modifying the Sanitation Districts' existing ocean discharge system (Alternative 4, the recommended alternative) and constructing a new ocean discharge system (Alternatives 1, 2, and 3). Therefore, the project purpose and needs are well defined and closely related to the Clearwater Program's goal and objectives.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-8

The comment states that the draft EIR/EIS was inadequate and incomplete because it did not adequately address environmental justice impacts on the lower service area residents near the JWPCP. The comment suggests that the absence of sludge conveyance/solids processing and the abundance of cost-effective recycled water in the upper service areas provided residents in these areas with advantages not available to residents in the lower service areas. It further suggests that the document did not adequately address increased water conservation/sewage reduction in the upper areas to benefit the lower areas.

See Responses to Comments P31-2 and P31-6.

The flow projections presented in Section 4.8 of the draft MFP were based on a per-capita wastewater generation rate derived over an 8-year period that included years of sustained drought conditions and increased water conservation efforts. The resulting per-capita generation rate was determined to be 83 gallons per capita per day (gpcd), which is 18 percent lower than the 101-gpcd rate used for the previous JOS facilities planning effort in 1995. Although the Sanitation Districts have historically

supported water conservation within the JOS service area, and will continue to do so, the California Health and Safety Code limits what the Sanitation Districts can do to promote water conservation. Additionally as described in Section 3.6.2 of the draft MFP, state regulations require the capacity of sanitary sewer systems to be appropriately designed to reasonably prevent overflows. Therefore, as previously discussed, Alternative 4 (the recommended alternative) would benefit the entire service area by providing adequate system capacity, improving overall system reliability, and reducing the risk of discharges to the Wilmington Drain or sewer overflows.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-9

The comment states that project purpose, needs, goals, and objectives provided in the draft Executive Summary were not clearly defined. The comment further states the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because it did not consider a straight tunnel alignment alternative, overall system sewage reductions, and an optimal ocean discharge location.

As previously discussed in Response to Comment P31-3, Chapter 1 of the draft MFP, Chapter 1 of the draft EIR/EIS, and the draft Executive Summary each provided a broad, qualitative goal statement for the Clearwater Program, as well as a set of specific objectives for meeting the goal. These documents further elaborated on the objectives immediately after they were listed and, pursuant to NEPA, described the project purpose and needs. The draft EIR/EIS analyzed a reasonable range of alternatives that feasibly met the project objectives. These final feasible alternatives were determined through the alternatives analysis process presented in Chapter 6 of the draft MFP and summarized in Chapter 3 of the draft EIR/EIS.

A straight tunnel alignment option was evaluated as one of 23 conceptual onshore tunnel options in Section 6.3.3.1 of the draft MFP. This straight tunnel alignment option would parallel the existing two tunnels. However, the existing 68 tunnel easements would not permit construction of a new tunnel, and a parallel tunnel alignment just beyond the existing easements would require approximately 1,060 new easements. Therefore, this conceptual option was eliminated, and the remaining 22 conceptual onshore tunnel options that were aligned primarily through public rights-of-way were carried forward into the analysis as preliminary options.

As previously discussed in Response to Comment P31-8, the Sanitation Districts recognize that water use efficiency and conservation measures can effectively reduce future capacity shortfalls, and those effects were considered in the flow projections presented in Section 4.8 of the draft MFP.

The Sanitation Districts are not proposing to expand the JWPCP. Under the recommended plan (Alternative 4), as described in Chapter 7 of the draft MFP, projected increases in wastewater flow would be accommodated through a 25-MGD expansion of the SJCWRP West. The JWPCP permitted treatment capacity would remain at 400 MGD. The full-secondary, disinfected effluent produced at the JWPCP consistently meets all treatment requirements for safe ocean discharge. The existing ocean outfall locations are extensively monitored on a regular basis, and there is no evidence to suggest the Sanitation Districts' ocean discharge of secondary-treated effluent from the JWPCP is having an adverse impact on the marine environment. With the exception of legacy (1940s to 1970s) dichlorodiphenyltrichloroethane/polychlorinated biphenyl (DDT/PCB) sediment contamination, the health of the ecosystems (i.e., benthic, pelagic, kelp forest, and rocky reef) near the existing outfalls is

comparable to other parts of the Southern California coastal zone that do not have treated wastewater effluent outfalls.

In support of the Clearwater Program planning effort, as referenced in Section 13.2.2.1 of the draft EIR/EIS, the Sanitation Districts conducted the Palos Verdes Flow Study from October 2000 through April 2008, which included the collection of temperature and current data on the Palos Verdes and San Pedro Shelves over a 9-year period. More than 100 million data points generated from this unprecedented field observation program were used in a computer model to determine optimal locations for a new ocean outfall. As described in Sections 13.4.3.2 and 13.4.4.2 of the draft EIR/EIS, this information was utilized to ensure that a new outfall would not impair receiving water quality and that the effluent plume would remain submerged.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-10

The comment states the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because the recommendations were based on a project goal, objectives, purpose, needs, and criteria that were insufficient in assessing feasibility.

As previously discussed in Responses to Comments P31-3, P31-7, and P31-9, the draft EIR/EIS analyzed a reasonable range of alternatives that feasibly met the project objectives and purpose and needs. These final feasible alternatives were determined through the alternatives analysis process presented in Chapter 6 of the draft MFP and summarized in Chapter 3 of the draft EIR/EIS.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-11

The comment states the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because the schedule presented did not take into consideration water conservation and increased recycling.

The Clearwater Program program-wide schedule was described in Sections 7.2 and 7.3 of the draft MFP, Section 3.3.1 of the draft EIR/EIS, and the draft Executive Summary. The project-specific schedule was included in Table 7-1 of the draft MFP, Table 3-13 of the draft EIR/EIS, and the draft Executive Summary. The Clearwater Program implementation schedule is driven by the short-term need to inspect and repair the existing JWPCP effluent tunnels, rehabilitate the existing ocean outfalls, and optimize the upstream WRPs. The Clearwater Program implementation schedule also is driven by the long-term need to accommodate projected wastewater flows in the JOS through conveyance system relief and expansion of the SJCWRP.

As previously discussed in Responses to Comments P31-8 and P31-9, the Sanitation Districts recognize that water use efficiency and conservation measures can effectively reduce future capacity shortfalls and those effects were considered in the flow projections presented in Section 4.8 of the draft MFP.

As previously discussed in Response to Comment P31-1, the Sanitation Districts own and operate WRPs that produce approximately 165 MGD of high-quality recycled water. Approximately half of the recycled water is reused. The other (unused) half of the recycled water produced is currently wasted, and discharged to nearby receiving waters (i.e., rivers, creeks, and channels) that convey it to the ocean. While efforts to increase reuse at the JOS WRPs through coordination with local water agencies and regulators are ongoing, the anticipated success of these efforts will have no bearing on the need to build a new effluent tunnel at the JWPCP. The permitted capacity of the JWPCP would remain at 400 MGD, and the associated peak flows of 927 MGD would require an approximately 18-foot-diameter (internal) effluent tunnel. Therefore, even if the Sanitation Districts could achieve the goal of 100 percent reuse at the WRPs, there would not be a commensurate reduction in wastewater flow to the JWPCP; there would only be a reduction in what is currently discharged by the WRPs to the receiving waters.

As previously described in Response to Comment P31-2, Chapter 6 of the draft MFP did explore the feasibility of diverting enough flow from the existing JWPCP ocean discharge system to allow for the inspection and repair of each of the existing tunnels. However, as discussed in Section 6.2.6.5 of the draft MFP, it was determined that a reduced ocean discharge option was not viable, and thus was not further evaluated in the draft EIR/EIS.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-12

The comment states the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because the program-wide and project-specific recommendations and associated impacts were not clearly presented.

As described in Chapter 1 of the draft MFP, Chapter 1 of the draft EIR/EIS, and the draft Executive Summary, the Clearwater Program comprises program-wide component areas and project-specific elements. The term program was consistently used in reference to options/alternatives that would be implemented over a longer period of time and, thus, included a general level of detail. The term project was consistently used in reference to options/alternatives that would be implemented in the near term and, thus, a greater level of detail was available for analysis. As presented in Chapter 6 of the draft MFP, the program and project options/alternatives were systematically analyzed through a multi-tier screening process to determine feasibility. The environmental impacts of feasible alternatives, each of which had program and project elements, were then evaluated in the draft EIR/EIS. Therefore, the recommended alternative (Alternative 4) for the Clearwater Program, which was presented in Chapter 7 of the draft MFP, Chapter 3 of the draft EIR/EIS, and the draft Executive Summary, included both program-wide and project-specific recommendations.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-13

The comment states the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because it lacked program-wide recommendations, inconsistently categorized the program elements, and failed to present a program schedule.

See Response to Comment P31-12 for a discussion on program and project. For the purposes of the alternatives analysis presented in Chapter 6 of the draft MFP, wastewater conveyance was evaluated in combination with treatment (plant expansion/optimization) as one program component area. As described in Section 6.2.2 of the draft MFP, this was the most logical approach because of the interdependence between treatment capacity and the conveyance system flows (i.e., an upstream WRP expansion reduces the need for downstream sewer relief). However, for the purposes of environmental analysis presented in the draft EIR/EIS, it was more logical to evaluate potential impacts based on location, so conveyance improvements, plant expansion, and process optimization were assessed as separate program elements. Table 3-2 of the draft EIR/EIS presented a side-by-side comparison of the program component areas in the draft MFP and program elements in the draft EIR/EIS.

See Response to Comment P31-11 for a discussion on the program and project schedule.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-14

The comment states the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because it failed to address JWPCP effluent management, include a straight tunnel alignment alternative, consider an optimal ocean discharge location before identifying tunnel alignments, and associate upstream program elements with flows through the JWPCP effluent management system.

See Response to Comment P31-12 for a discussion on the program and project. As shown in Table 3-4 of the draft EIR/EIS, at a program-level, the draft EIR/EIS analyzed the potential environmental impacts for one alternative with the following program elements: conveyance improvements, plant expansion, process optimization, WRP effluent management, solids processing, and biosolids management. As shown in Table 3-9 of the draft EIR/EIS, at a project-level, the draft EIR/EIS analyzed the potential environmental impacts of four alternatives for JWPCP effluent management under the following functional categories: tunnel alignment, shaft site, and riser/diffuser area. As described in Sections 3.1, 3.2, and 3.3 and shown in Figure 3-3 of the draft EIR/EIS, each of the four project alternatives in combination with the program alternative constitutes Alternatives 1, 2, 3, and 4 in the draft EIR/EIS. Therefore, JWPCP effluent management was addressed at a project-specific level of analysis in the draft EIR/EIS.

See Response to Comment P31-9 for a discussion on the evaluation of a straight tunnel alignment option. As previously described, this conceptual option was evaluated and eliminated in Section 6.3.3.1 of the draft MFP.

As previously discussed in Response to Comment P31-9, more than 100 million data points generated from the Palos Verdes Flow Study from October 2000 through April 2008 were used in a computer model to determine optimal locations for a new ocean outfall (see Section 13.2.2.1 of the draft EIR/EIS). As described in Sections 13.4.3.2 and 13.4.4.2 of the draft EIR/EIS, this information was utilized to ensure that a new outfall would not impair receiving water quality and that the effluent plume would remain submerged. As described in Section 6.3.3.5 of the draft MFP, because each offshore tunnel alignment is dependent on the locations of the intermediate shaft site and diffuser area, preliminary options for the offshore alignment were established after the viable options for the intermediate shaft site and diffuser area were determined. Therefore, optimal ocean discharge locations were considered before identifying tunnel alignments.

As described in Chapter 1 of the draft MFP and Chapter 1 of the draft EIR/EIS, the condition and capacity of the existing JWPCP ocean discharge system were major concerns addressed through the Clearwater Program planning effort. Based on the program-wide alternatives analysis for JWPCP effluent management presented in Chapter 6 of the draft MFP, it was determined that this concern could be feasibly met by constructing a new ocean discharge system (Alternatives 1, 2, and 3) or by modifying the existing ocean discharge system (Alternative 4). A new tunnel would be required under each of these alternatives, the diameter of which would be dictated by projected peak flows at the JWPCP. A summary of the analysis used to project future flows in the JOS was provided in Chapter 4 of the draft MFP. Based on the wastewater conveyance and treatment alternatives analysis provided in Chapter 6 of the draft MFP, it was determined that projected flow increase would be accommodated through an expansion of the SJCWRP. Consequently, the permitted capacity of the JWPCP would remain at 400 MGD, and the associated peak flows of 927 MGD would require an approximately 18-foot-diameter (internal) effluent tunnel. Therefore, the projected flows associated with the proposed upstream program elements were used to establish the preliminary engineering design criteria for the proposed ocean discharge system project elements.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-15

The comment states that the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because future projects in the Clearwater Program should be subject to supplemental EIRs and not be included in the current programmatic EIR.

The Clearwater Program EIR/EIS is both a project and program environmental document. For the program, future environmental reviews will be required to fully comply with CEQA, and in some cases NEPA. These future reviews may result in supplemental initial studies (and in some cases environmental assessments) to determine whether additional environmental impacts would be significant. If significant impacts could not be mitigated to less than significant, then supplemental EIRs (and in cases EISs) may be prepared.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-16

The comment states that the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because it did not consider a straight tunnel alignment alternative.

See Response to Comment P31-9 for a discussion on the evaluation of a straight tunnel alignment option. As previously described, this conceptual option was evaluated and eliminated in Section 6.3.3.1 of the draft MFP.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-17

The comment requests the use of alternative fuels for the tunnel locomotive and slurry conveyance, and the use of JWPCP solids processing facilities to dewater slurry-excavated material. The comment further states that without consideration of alternate tunnel conveyance for excavated material, the draft EIR/EIS was inadequate and incomplete and must, therefore, be revised and recirculated.

In Chapter 5 of the draft EIR/EIS, mitigation measures that exceed regulatory requirements were included to protect public health to the highest extent practical and to reduce air quality impacts.

MM AQ-2g directly addresses the highest emissions source of nitrogen oxide of the proposed project by utilizing the cleanest locomotive engine commercially available. This mitigation would exceed U.S. Environmental Protection Agency emission standards applicable to in-use locomotive engines.

An electric locomotive was considered but deemed infeasible for several reasons, including: (1) the inability to stay charged given the number of trips back and forth and the tunnel distance involved; (2) the safety hazard of an in-tunnel charging station given the potential of encountering water during tunnel construction; and (3) the need for a reliable, uninterrupted power source to evacuate personnel in the event of an emergency. Alternative fuels, such as liquefied natural gas and compressed natural gas, would not be suitable in a confined space due to concerns of potentially creating an explosive or flammable environment as a result of a tank leak. Conversely, diesel has a very low vapor pressure and is essentially non-volatile. The concerns over using alternative fuels would also apply to the system used to convey the excavated material. The type of tunneling system used will be determined during final engineering design based on geological conditions. If a slurry tunnel boring machine (TBM) is selected, electrically powered pumps would be utilized to transfer the excavated materials to the surface through pipes, and a tunnel locomotive would be used to transport supplies and personnel. If an earth- pressure balance (EPB) TBM is selected, a tunnel locomotive would be used to transport supplies, personnel, and excavated material. The method for removal of the excavated materials is specific to each type of TBM and cannot be used interchangeably. Therefore, for an EPB TBM, an electrically powered pump for the removal of excavated materials would not be feasible.

For clarification, Section 3.3.2.1, last paragraph, is revised in the final EIR/EIS as follows:

> Two types of TBMs could be used to build the tunnel: earth-pressure balance (EPB) or slurry. These TBMs differ in how the excavated material generated from the tunneling operations is handled, transported, and treated~~removed~~. With an EPB TBM, locomotives convey the excavated material in rail cars back through the constructed portion of the tunnel to the shaft for removal by crane. The excavated material would be retained at the surface to allow any water to separate before removal. With a slurry TBM, a slurry is supplied by pipe from the ground surface of the shaft to the cutterhead of the TBM to suspend the excavated material, which is then~~the excavated material would be blended with a slurry mixture and~~ pumped back to the shaft and up to the surface through pipes. In this case, the excavated material would be processed at a slurry separation plant at the surface of the shaft site prior to disposal. A bentonite additive is used in the slurry TBM method, which may preclude ocean disposal of the excavated material. For the purposes of evaluating the greatest potentially significant environmental impacts, the tunnel construction was analyzed assuming either an EPB TBM or ~~the use of~~ a slurry TBM, depending on the resource area.

The JWPCP centrifuges were designed specifically for dewatering biosolids and would be unsuitable for dewatering the excavated materials. Additionally, there are no extra or unused centrifuges available at the JWPCP.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-18

The comment states that the draft EIR/EIS was inadequate and incomplete and must be revised and recirculated because it did not consider a straight tunnel alignment alternative and changes in the conveyance system that could reduce construction emissions.

See Response to Comment P31-9 for a discussion on the evaluation of a straight tunnel alignment option. As previously described, this conceptual option was evaluated and eliminated in Section 6.3.3.1 of the draft MFP.

Furthermore, as described in Chapter 7 of the draft MFP, the Sanitation Districts are proposing an expansion at the SJCWRP and approximately 33 miles of sewer relief to accommodate the projected wastewater flows for the year 2050. As described in Section 5.9.1 of the draft MFP, an expansion at the JWPCP would have required an estimated 44 miles of sewer relief. Therefore, the recommended alternative (Alternative 4) would result in a 25 percent reduction in conveyance system projects.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-19

The comment states that the draft EIR/EIS was inadequate and incomplete and must be revised and recirculated because geological testing did not identify the most likely fossil locations, the term fossils was not properly defined, and the impacts on fossils should have been mitigated to below significance levels.

Chapter 7 of the draft EIR/EIS addressed paleontological impacts of the Clearwater Program. The draft EIR/EIS detailed the geologic formations through which the alternatives would pass and identified which of these would be most likely to contain paleontological resources.

The draft EIR/EIS did not specifically define or exclude any type of paleontological resources. Consistently throughout Chapter 7 of the draft EIR/EIS, the analysis included all paleontological and fossil resources, and did not focus on bones. In fact, the word bone does not appear anywhere in the paleontological resources discussion.

The draft EIR/EIS identified impacts on paleontological resources that would be significant, and in some cases, unavoidable. For areas where ground disturbance would occur from above ground (e.g., at WRPs and shaft sites), MM CUL-3 was proposed to reduce impacts to less than significant. However, this mitigation is not possible for the tunnel, where a TBM would be used. A TBM has a cutterhead, which consists of a rotating disk with cutting teeth that grind the rock into small pieces. The TBM would pulverize and destroy any paleontological resources in its path. Even if paleontological fragments were detected in the excavated material, the TBM could not change course to avoid potential resources. It

would not be possible to perform geologic testing in front of the advancing TBM, nor would it be feasible to attempt to excavate hundreds of feet down under a public right-of-way to try to recover any potential resources in its path. Therefore, as described in Chapter 7 of the draft EIR/EIS, the impacts on paleontological resources, if present, would be significant and unavoidable.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-20

The comment states that the draft EIR/EIS was inadequate and incomplete because further mitigation and compensation could be implemented to reduce the significant impacts of program and project construction that would disproportionately affect the lower service areas.

See Response to Comment P31-2.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-21

The comment states that the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because it did not consider a straight tunnel alignment alternative.

See Response to Comment P31-9 for a discussion on the evaluation of a straight tunnel alignment option. As previously described, this conceptual option was evaluated and eliminated in Section 6.3.3.1 of the draft MFP.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-22

The comment states that the draft EIR/EIS did not consider a straight tunnel alignment alternative.

See Response to Comment P31-9 for a discussion on the evaluation of a straight tunnel alignment option. As previously described, this conceptual option was evaluated and eliminated in Section 6.3.3.1 of the draft MFP.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-23

The comment states that the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because the overall Clearwater Program goal was to identify a recommended plan.

The comment only refers to the introductory phrase of the overall Clearwater Program goal. Chapters 1 and 6 of the draft MFP, Chapter 1 of the draft EIR/EIS, and the draft Executive Summary each provided a

complete goal statement for the Clearwater Program, which was "to identify a recommended plan that is protective of public health and will best meet the needs of the JOS through the year 2050 in a cost-effective and environmental sound manner." These documents also provided a set of underlying objectives for meeting the goal. As previously discussed in Response to Comment P31-3, a reasonable range of program-wide and project-specific alternatives was systematically analyzed in Chapter 6 of the draft MFP, and those that could feasibly meet the overall goal and underlying objectives of the Clearwater Program were further analyzed in the draft EIR/EIS.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-24

The comment states that the draft EIR/EIS was incomplete and inadequate and must be revised and recirculated because the draft MFP used the same set of objectives to screen program-wide and project-specific options/alternatives and arrive at a recommended plan.

See Response to Comment P31-12 for a discussion on program and project. Because the project-specific alternatives for a new or modified ocean discharge system were based on the findings of the program-level alternatives analysis of JWPCP effluent management, it is appropriate that they meet the same overall goal and underlying objectives. The recommended alternative (Alternative 4) is the highest ranking combined program/project alternative.

Specific to this comment, the draft EIR/EIS was adequate, and recirculation is not necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-25

The comment notes that the feasible alternatives did not include water conservation measures and water recycling in the lower service areas due to high salt levels and speculates that inflow and leakage could be the cause of the high salt levels. The comment further states that the tunnel alignment for the recommended alternative should be straight.

Inflow and infiltration, which were addressed in Section 4.8.3.3 of the draft MFP, are not the cause of the relatively high dissolved solids concentrations in the wastewater tributary to the JWPCP. As described in Section 1.3.4 of the draft MFP, the JOS was developed over time to not only accommodate growth and take advantage of gravity flow, but to augment the regional water supply through water recycling. In the early 1960s, when wastewater flows began to approach the capacity limits of the downstream trunk sewers, a plan was developed to build WRPs at inland sites as an alternative to a massive expansion of the downstream sewer system and the JWPCP that would have otherwise been necessary. The WRPs were sited to take advantage of the nearby groundwater replenishment spreading grounds and of the relatively low concentration of dissolved solids (i.e., salts) in wastewater from the largely residential portions of the JOS. The wastewater with relatively high concentrations of dissolved solids is largely from industrial portions of the JOS. Because it is far more expensive and energy-intensive to reclaim, the wastewater with relatively high concentrations of dissolved solids continues to be treated at the JWPCP.

See Response to Comment P31-9 for a discussion on the evaluation of a straight tunnel alignment option. As previously described, this conceptual option was evaluated and eliminated in Section 6.3.3.1 of the draft MFP.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-26

The comment suggests the use of an EPB TBM with electrically powered slurry lines to convey excavated material to the JWPCP and the use of JWPCP dewatering centrifuges and odor control systems to reduce traffic, odor, and air emissions impacts. The comment also recommends the use of an electric or alternative fuel locomotive.

As previously discussed in Response to Comment P31-17, the use of electrically powered slurry lines with an EPB TBM would not be feasible.

Additionally, as previously discussed in Response to Comment P31-17, the JWPCP centrifuges were designed specifically for dewatering biosolids and would be unsuitable for dewatering the excavated materials. The JWPCP odor control systems are designed for removing the odorous constituents that accumulate in the headspace of the treatment processes and biosolids storage buildings, and not for scrubbing diesel exhaust.

Furthermore, as previously discussed in Response to Comment P31-17, the use of an electric or alternative fuel locomotive to support tunneling activities would not be feasible. MM AQ-2g would require a Tier 4 engine be used for the tunnel locomotive. This would be the cleanest diesel engine available.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-27

The comment notes that the feasible alternatives did not include water conservation measures and water recycling in the lower service areas due to high salt levels and speculates that inflow and leakage could be the cause of the high salt levels. The comment further states that tunnel alignment for the recommended alternative should be straight.

See Response to Comment P31-25 for a discussion regarding salt concentrations in wastewater.

See Response to Comment P31-9 for a discussion on the evaluation of a straight tunnel alignment option. As previously described, this conceptual option was evaluated and eliminated in Section 6.3.3.1 of the draft MFP.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-28

The comment favors a straight tunnel alignment to reduce significant and unavoidable cultural resources impacts.

See Response to Comment P31-9 for a discussion on the evaluation of a straight tunnel alignment option. As previously described, this conceptual option was evaluated and eliminated in Section 6.3.3.1 of the draft MFP.

See Response to Comment P31-19 for a discussion on cultural resources impacts.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-29

The comment states that the draft EIR/EIS does not address the potentially significant seismic impacts of conveying solids from the upstream WRPs to the JWPCP, centrally processing solids within an active fault zone at the JWPCP, and the differential movement of interconnected facilities.

As described in Chapter 7 of the draft MFP, the Sanitation Districts proposed an expansion at the SJCWRP to accommodate the projected wastewater flows for the year 2050. Because the solids produced by the upstream WRPs and returned to the sewers for treatment at the JWPCP constitute less than 2 percent of the JWPCP influent flow, with the expansion of the SJCWRP, there would be a net reduction in the amount of wastewater (including solids from the upstream WRPs) that would have otherwise been conveyed to the JWPCP. As described in Section 8.4.3.1 of the draft EIR/EIS, approximately 33 miles of the conveyance system would be improved within the JOS. All relief sewers would be constructed to meet the modern-day seismic standards established by the California Building Code, which was described in Section 8.3.2.3 of the draft EIR/EIS. Therefore, as described in Section 8.4.3.1 of the draft EIR/EIS, this impact would be less than significant.

As presented in Table 8-5, shown on Figures 8-1 and 8-3a, and described in Section 8.4.3.1 of the draft EIR/EIS, the JWPCP is not near or within a known active fault zone. The active Palos Verdes, Cabrillo, and Newport-Inglewood Faults are located more than 5 miles away. Therefore, the centralized solids processing facilities would not be directly affected by a fault rupture. However, seismic ground shaking levels could result in damage to the facilities. Implementation of MM GEO-3 would reduce this impact to less than significant.

Potential differential movement between interconnected facilities is addressed in the California Building Code. All facilities being proposed under the Clearwater Program would be designed and constructed to meet modern-day standards for seismic ground shaking, liquefaction, and shrinking/swelling soils, but significant impacts could remain. However, as described in Sections 8.4.3., 8.4.4, 8.4.5, and 8.4.6 of the draft EIR/EIS, implementation of MM GEO-3, MM GEO-4, MM GEO-5, and MM GEO-7 would reduce these impacts to less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-30

The comment states that the draft EIR/EIS did not consider a straight tunnel alignment; did not disclose areas subject to subsidence; did not adequately document sources for statements about artificial recharge; did not provide boundary mapping of oil fields and areas of historic subsidence; and did not provide well-head, casing path, and well toe information.

See Response to Comment P31-9 for a discussion on the evaluation of a straight tunnel alignment option. As previously described, this conceptual option was evaluated and eliminated in Section 6.3.3.1 of the draft MFP.

As stated in Section 8.2.1.5, subsidence was documented in the 1940s and 1950s in the Wilmington Oil Fields, but artificial recharge has since managed this problem. References for this chapter were provided in Section 25.8 of the draft EIR/EIS. Additionally, numerous mitigation measures were included in the draft EIR/EIS that require geological investigations and site-specific recommendations to minimize risks associated with ground failure and subsidence. With mitigation, impacts would be less than significant.

As discussed in Section 10.2.2.1 of the draft EIR/EIS, the Wilmington to San Pedro Shelf alignment and the Wilmington to Palos Verdes Shelf alignment would pass through the Wilmington Oil Field, which contains numerous active, idle, and abandoned oil wells; the Figueroa/Gaffey to Palos Verdes Shelf alignment would skirt the southwestern margin of the Wilmington Oil Field; and the Figueroa/Western to Royal Palms alignment would briefly skirt the southwestern margin of the Wilmington Oil Field and may include the southeastern margin of the Torrance Oil Field. It was also stated that relatively few active, idle, or abandoned oil wells were mapped in the vicinity of the Figueroa/Western to Royal Palms alignment, which is the recommended alternative (Alternative 4). The Long Beach Oil Fields are not located within the Clearwater Program study area.

Section 10.3.2.9 of the draft EIR/EIS acknowledged that the project would be located within the administrative boundaries of the Torrance and Wilmington Oil Fields. Additionally, it was stated that the tunnel alignments presented in the document were located specifically to minimize interference with active and idle wells. In the unlikely event that an abandoned oil well were encountered at a shaft site or during tunnel boring, it was stated that the well would be re-abandoned in accordance with the California Code of Regulations Title 14, Division 2, Chapters 2 through 4, and the approval of the local California Division of Oil, Gas, and Geothermal Resources office.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-31

The comment states that Figures 8-2, 8-3a, and 8-4 of the draft EIR/EIS did not adequately present the geological setting with respect to scale and the relationship between geology and the project alternatives. The comment further states that seismic risk could not be adequately assessed unless the tunnel alignments were depicted with geological conditions.

Each figure was scaled to be displayed on a single 8½-inch by 11-inch sheet of paper. On Figure 8-2 of the draft EIR/EIS, the different color segments along each alignment only referred to the depth of the tunnel below the ground surface; they were not intended to illustrate which geological formations the tunnel would be boring through. While the stratigraphic relationships shown on Figure 8-3a of the draft EIR/EIS were for the ground surface, they did represent the types of material through which the tunnels would be constructed. Properties of the formations at the surface can be used to help anticipate how the material will perform at the depth of the tunnel. Figure 8-4 of the draft EIR/EIS presented a general overview of the geological profile that exists between the JWPCP and Royal Palms shaft sites; therefore, no scale was necessary. A general comparison of some geological hazards along each tunnel alignment was presented in Table 8-7 of the draft EIR/EIS.

As described in Section 8.4.1 of the draft EIR/EIS, geotechnical reports were prepared for the Sanitation Districts by Fugro West, and the resulting analysis and recommendations were evaluated in a feasibility

report prepared by Parsons (see Chapter 25 of the draft EIR/EIS for references). The feasibility report considered potential geotechnical and seismic issues that could affect the design and construction of the facilities for the project alternatives. Geological impacts were analyzed in Chapter 8 of the draft EIR/EIS, and it was determined that, with mitigation, all geological impacts would be less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-32

The comment states that Sections 8.2.3.1 and 8.2.3.2 and Tables 8-7 and 8-8 of the draft EIR/EIS were contradictory and did not adequately provide the basis for an impact analysis due to how liquefaction zones were presented in relationship to the project alternatives. The comment also states that the offshore portions of the alternatives were not addressed in the draft EIR/EIS.

Table 8-7 of the draft EIR/EIS provided a summary of the liquefaction potential for the various tunnel alignments. Table 8-8 of the draft EIR/EIS identified whether the shaft sites would be within a liquefaction hazard zone. The information presented is different and not contradictory. Sections 8.2.3.1 and 8.2.3.2 of the draft EIR/EIS provided an overview of the conditions each alternative would encounter. A more detailed geological profile was provided in the feasibility report prepared by Parsons, as referenced in the tables (see Chapter 25 of the draft EIR/EIS for references). The offshore portion of the tunnel alternatives was addressed in Table 8-7 of the draft EIR/EIS. Mitigation measures in Chapter 8 of the draft EIR/EIS require design-level geotechnical analysis and incorporation of the findings into the project design to reduce the geological impacts to less than significant.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-33

The comment states that Chapter 13 of the draft EIR/EIS was inadequate and incomplete because it did not take into consideration the impacts of program-wide component areas on the marine environment and did not consider an optimal ocean discharge location.

As previously discussed in Response to Comment P31-14, the projected flows associated with the proposed upstream program elements were used to establish the preliminary engineering design criteria for the proposed ocean discharge system project elements.

As previously discussed in Responses to Comments P31-9 and P31-14, more than 100 million data points generated from the Palos Verdes Flow Study from October 2000 through April 2008 were used in a computer model to determine optimal locations for a new ocean outfall (see Section 13.2.2.1 of the draft EIR/EIS). Additionally, the recommended alternative (Alternative 4) would avoid the marine environment impacts associated with the construction of a new riser/diffuser as required by Alternatives 1, 2, and 3.

Specific to this comment, the draft EIR/EIS was adequate.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-34

The comment states that Chapter 13 of the draft EIR/EIS was inadequate and incomplete because it did not consider an optimal ocean discharge location or potential changes in effluent quality characteristics and flows at the JWPCP.

As previously discussed in Responses to Comments P31-9 and P31-14, more than 100 million data points generated from the Palos Verdes Flow Study from October 2000 through April 2008 were used in a computer model to determine optimal locations for a new ocean outfall (see Section 13.2.2.1 of the draft EIR/EIS). Additionally, the recommended alternative (Alternative 4) would avoid the marine environment impacts associated with the construction of a new riser/diffuser as required by Alternatives 1, 2, and 3.

Chapter 4 of the draft MFP provided an analysis of wastewater characteristics and flow projections. Section 4.7.4 of the draft MFP specifically examined long-term trends in influent data for key parameters at the upstream WRPs and the JWPCP. Section 4.7.5 of the draft MFP concluded that, overall, the loadings and concentrations are expected to remain relatively constant. As previously discussed in Response to Comment P31-8, the flow projections presented in Section 4.8 of the draft MFP were based on a per-capita wastewater generation rate of 83 gpcd, which was derived over an 8-year period that included years of sustained drought conditions and increased water conservation efforts. Based on these findings regarding wastewater characteristics and flow projections, Section 13.4.1.2 of the draft EIR/EIS appropriately assumed the following: (1) all effluent discharged from any of the alternative outfall sites would, at a minimum, be treated to levels consistent with the effluent currently discharged through the existing ocean outfalls; (2) for operation of the new riser and diffuser, the Sanitation Districts' existing national pollutant discharge elimination system (NPDES) individual permit for wastewater treatment discharges would be updated; (3) NPDES requirements for all discharge alternatives would be no less protective of the beneficial uses of the receiving waters than the current NPDES permit, and the Sanitation Districts would have to comply with either the existing NPDES permit or an updated permit for the new riser and diffuser; and (4) the physical characteristics of the effluent released on the San Pedro Shelf or Palos Verdes Shelf would be the same as the existing effluent characteristics despite any change in location or change in depth of release (between 175 and 200 feet). Furthermore, based on the proposed expansion of the SJCWRP, it was assumed that the permitted capacity of the JWPCP would remain at 400 MGD, which is consistent with average daily flow that occurred at the JWPCP as recently as February 1998. As previously discussed in Response to Comment P31-9, the existing outfall locations are extensively monitored on a regular basis, and there is no evidence to suggest the current Sanitation Districts' ocean discharge of secondary-treated effluent from the JWPCP is having an adverse impact on the marine environment. With the exception of legacy DDT/PCB sediment contamination, the health of the ecosystems near the current outfall is comparable to other parts of the Southern California coastal zone that do not have treated wastewater effluent outfalls.

Specific to this comment, the draft EIR/EIS, including Chapter 13, was adequate.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-35

The comment states that the draft EIR/EIS contained a contradictory, inadequate, and incomplete assessment of environmental justice issues.

See Response to Comment P31-2.

Specific to this comment, the draft EIR/EIS was adequate.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-36

The comment states that the draft EIR/EIS was inadequate and incomplete because it did not consider environmental justice impacts or mitigation measures with respect to complete reuse of advanced-treated effluent, decentralized solids processing, a straight tunnel alignment, a slurry pipeline from an EPB TBM to the JWPCP, an optimal ocean discharge location, increases in flows at the JWPCP, and screening/sampling for paleontological resources in the excavated material from the slurry blend or tunnel rail cars. Note that the comment does not explain the link between several of these issues and environmental justice concerns, such as marine disposal sites and paleontological resources, for which disproportionate impacts on minority and low-income populations would not be likely.

See Responses to Comments P31-2, P31-14, P31-19, P31-26, and P31-34.

Specific to this comment, the draft EIR/EIS was adequate.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P31-37

The comment states that the draft EIR/EIS was inadequate and incomplete because it did not adequately mitigate significant irreversible cultural resources impacts by expanding the evaluation of paleontological resources during construction.

See Response to Comment P31-19. The draft EIR/EIS did not specifically define or exclude any type of paleontological resources. Consistently throughout Chapter 7 of the draft EIR/EIS, the analysis included all paleontological and fossil resources; nowhere did it state that the analysis focused on resources greater than 1 inch in diameter.

Specific to this comment, the draft EIR/EIS was adequate.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P32: Southern California Edison – Ben Wong, Director, Local Public Affairs

Commenter P32

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Ben Wong
Director
Local Public Affairs

April 10, 2012

Steven W. Highter
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, CA 90601

Re: Clearwater Program Draft Environmental Impact Report (DEIR)

Dear Mr. Highter:

Southern California Edison (SCE) appreciates the opportunity to provide comment on the above referenced DEIR.

SCE Company rights-of- ways and fee-owned properties are purchased for the exclusive use of SCE to operate and maintain its present and future facilities. Any proposed use will be reviewed on a case-by-case basis by SCE's Operating Department. Approvals or denials will be in writing based upon review of the maps provided by the developer and compatibility with SCE right-of-way constraints and rights. In the event the project proposes to impact SCE facilities or its land related rights, please forward five (5) sets of project plans, and a PDF copy of the same, depicting SCE's facilities and its associated land rights to the following location for review: P32-1

Real Properties Department
Southern California Edison Company
2131 Walnut Grove Avenue
G.O.3 – Second Floor
Rosemead, CA 91770

Please be advised if development plans result in the need to build new or relocate existing SCE electrical facilities that operate at or above 50 kV, the SCE construction may have environmental consequences subject to CEQA review as required by the California Public Utilities Commission (CPUC). If those environmental consequences are identified and addressed by the local agency in the CEQA process for the larger project, SCE may not be required to pursue a later, separate, mandatory CEQA review through the CPUC's General Order 131-D (GO 131-D) process. If the SCE facilities are not adequately addressed in the CEQA review for the larger project, and the new facilities could result in significant environmental impacts, the required additional CEQA review at the CPUC could delay approval of the SCE power line portion of the project for two years or longer. P32-2

Once again, we appreciate the opportunity to comment on the project. If you have any questions regarding this letter, do not hesitate to contact me at (323) 720-5292.

Sincerely,

Ben Wong

1000 Potrero Grande
Monterey Park, CA 91754
(323) 720-5292 PAX 45292
Fax: (323) 720-5208 21977
ben.wong@sce.com

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Response to Comment P32-1

The comment requests coordination with Southern California Edison (SCE) prior to any use of SCE rights-of-way or fee-owned properties.

As standard practice, the Sanitation Districts of Los Angeles County (Sanitation Districts) will coordinate with utility providers, including SCE, during final design and construction.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P32-2

The comment states that additional California Environmental Quality Act (CEQA) review may be required if the Clearwater Program necessitates rebuilding or relocating SCE electrical facilities that operate at or above 50 kilovolts (kV).

The Sanitation Districts are aware that additional CEQA review could be required if implementation of the Clearwater Program requires rebuilding or relocating any SCE electrical facilities that operate at or above the 50-kV thresholds prescribed by the California Public Utilities Commission, and that the additional review could result in project delays.

No revisions to the draft EIR/EIS are required in response to this comment.

Commenter P33: JoAnn Wysocki – Resident

April 10, 2012

Commenter P33

CLEARWATER Program

Public Hearing for Draft EIR

COMMENT FORM

This form is provided as a convenience and is not required. Your comments may be submitted at any time during the public comment period, which ends on April 10, 2012.

Name: JoAnn Wysocki

Organization: Resident

Mailing Address: 1006 KING AVE.

City: WILMINGTON State: CA Zip: 90744-3204

E-mail: None

OUTLINE OF TOPICS ON ESPECIAL NOTE

(hand copy)

1. Cost of E.I.R. P33-1
2. Sepulveda - Surge Tower - East Shaft Site P33-2
3. Traffic Statistics P33-3
4. West Shaft Site P33-4
5. Hours of Construction P33-5
6. Traffic due to Construction P33-6
7. 100 Ft. Crane P33-7
8. Location of JWPCP P33-8
9. San Pedro not Wilmington P33-9

I would like to receive future public notices regarding the project via: ☐ E-mail ☐ Regular Mail

You may hand in this form during the public hearing or mail/e-mail it to:

Steven Highter, P.E.
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601
shighter@lacsd.org

CLEARWATER
Program

Public Hearing for Draft EIR II

COMMENT FORM

This form is provided as a convenience and is not required. Your comments may be submitted at any time during the public comment period, which ends on April 10, 2012.

Name: JoAnn Wysocki

Organization: Resident

Mailing Address: 1006 King Avenue

City: Wilmington State: CA Zip: 90744-3020

E-mail: none

10. Define Ruderal P33-10

11. Small Print Volume I appendices P33-11

12. Figueroa St. at Harry Bridges P33-12

13 Frees to Harry Bridges - "C" to John S. Gibson P33-13

14 Pasha Terminal P33-14

15. L.A.P.D. Failure to respond P33-15

16. Water Uses P33-16

17. Put out to bid: Cost over runs - street sweeping and street cleaning; grafitti removal. telephone contracts P33-17

I would like to receive future public notices regarding the project via: ☐ E-mail ☐ Regular Mail

You may hand in this form during the public hearing or mail/e-mail it to: B. Final EIR P33-18

Steven Highter, P.E.
Supervising Engineer, Planning Section
Sanitation Districts of Los Angeles County
1955 Workman Mill Road
Whittier, California 90601
shighter@lacsd.org

Preface

The comments represent an abbreviated outline of the oral comments made at the public hearings on the draft EIR/EIS. Every effort has been made to interpret the comments and provide informative responses based on statements made by Commenters P3, P8, and P20.

Response to Comment P33-1

The comment asks about the printing costs associated with the draft EIR/EIS.

The cost for printing and mailing one copy of the draft EIR/EIS, including the Executive Summary, Master Facilities Plan (MFP), and appendices, was approximately $690. The Sanitation Districts of Los Angeles County (Sanitation Districts) and U.S. Army Corps of Engineers (Corps) are cognizant of the need to conserve paper and minimize document reproduction costs. Thus, only a limited number of hard copies were produced and the use of electronic distribution was maximized. Electronic documents were made available on the Sanitation Districts' website and the Clearwater Program website, as well as distributed via compact disc. However, to facilitate public access to the materials, hard copies were made available for review at three public libraries in the project area and at the main headquarters of the Sanitation Districts. In addition, a few hard copies were produced for the record copies of the various agencies involved. Overall, 18 full sets of documents were produced.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-2

The comment requests clarification as to why Sepulveda Boulevard is mentioned various times in the draft EIR/EIS even though it is located away from the alternative sites. The comment also refers to the Joint Water Pollution Control Plant (JWPCP) East shaft site and requests information regarding additional facilities at the site, including a possible surge tower.

As described in Section 18.2.2 of the draft EIR/EIS, Sepulveda Boulevard transects the northern portion of the JWPCP. Because each of the alternatives analyzed included improvements to the JWPCP and a shaft site at the JWPCP, Sepulveda Boulevard was referenced numerous times in the analysis.

The JWPCP East shaft is not being proposed under Alternative 4 (the recommended alternative), which would instead require the 19-acre JWPCP West shaft site to support tunnel construction. As described in Section 7.2.5.1 of the draft MFP and Sections 3.3.2.2 and 4.4.5.2 of the draft EIR/EIS, upon completion of tunneling activities, the 40- to 60-foot-diameter JWPCP West shaft would be converted into a drop structure and connected to the existing JWPCP effluent force main, located just north of Lomita Boulevard. Should the existing effluent pumping plant at the JWPCP become inadequate in the future, space within the JWPCP West shaft site has been allocated for the placement of a future pumping plant. The pumping plant – along with a ground-level cover over the shaft, a surge tower (approximately 30 feet tall), vent pipes, and access covers – would require a total of approximately 0.5 acre.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-3

The comment suggests that the baseline traffic count data used in the traffic analysis was collected in 2009. The comment also requests that traffic analysis be conducted at Anaheim Street and Figueroa Street.

As discussed in Section 18.2.3 of the draft EIR/EIS, the traffic impact analysis was based on counts collected in late February and early March 2010 at all but three study intersections. The exceptions, located in Wilmington, used 2008 baseline count data for projecting future conditions in the vicinity of Figueroa Street and Harry Bridges Boulevard to provide consistency with the Final Environmental Impact Report for the Wilmington Waterfront Development Project, which was certified when the traffic analysis for the Clearwater Program was initiated. The year of the counts was correctly shown for the title of Figure 18-3, Existing (2010) Peak Hour Traffic Volumes, and the base counts were provided in Appendix 18-A of the draft EIR/EIS.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-4

The comment requests additional information on the JWPCP West shaft site.

See Response to Comment P33-2.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-5

The comment requests information on the hours of construction at the JWPCP West shaft site.

Shaft construction would be based on a single 10-hour shift working 5 days a week.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-6

The comment requests clarification on how truck trips were counted in the draft EIR/EIS.

Round trips were counted as two trips, as explained in footnote (a) to Tables 18-12, 18-22, and 18-29 of the draft EIR/EIS, which presented construction truck trip generation estimates for each of the alternatives. In addition, as stated in Section 18.2.3 of the draft EIR/EIS, a passenger car equivalent factor of 2.0 was applied to construction trucks to account for the fact that their operating characteristics differ from those of automobiles.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-7

The comment requests information on how the 100-foot crane would be brought to the shaft site.

The 100-foot crane would be delivered in pieces and assembled on site.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-8

The comment states that the location of the JWPCP was not properly shown in Volume 2 of the appendices after Page 8-A-9 on Attachment B and Attachment C-1.

It appears that the comment is in reference to Appendix 13-E of the draft EIR/EIS, Joint Water Pollution Control Plant National Pollutant Discharge Elimination System Permit (2006). The JWPCP was incorrectly located on Attachment B, Location Map, which was after Page A-9. The JWPCP should be located between Sepulveda Boulevard and Pacific Coast Highway, not south of Pacific Coast Highway.

However, Attachment B was a copy of a portion of a waste discharge permit that was issued to the Sanitation Districts in 2006 by the California Regional Water Quality Control Board (RWQCB). Therefore, as an official RWQCB document, it cannot be revised for the final EIR/EIS. However, it should be noted that Appendix 13-F included the most recently issued Joint Water Pollution Control Plant National Pollutant Discharge Elimination System Permit (2011) by the RWQCB. For the 2011 permit, Attachment B did correctly locate the JWPCP on the map.

Attachment C (Page C-1) was a flow schematic of the treatment system. Therefore, the comment is not relevant to Attachment C, Page C-1, of the draft EIR/EIS.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-9

The comment addresses the Existing (2010) Level of Service Worksheets found in Appendix 18-B of the draft EIR/EIS. The comment states that the city is incorrectly labeled on some of the worksheets.

These forms were used during analysis by the traffic consultant. Some of these forms include a field for the city in which the intersection is located. Although these intersections are actually within the jurisdiction of the city of Los Angeles, the traffic consultant used San Pedro or Wilmington to provide context for analysis purposes. This identification does not affect the accuracy of the analysis because the jurisdictional information is not relevant to the analysis.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-10

The comment asks for a definition of ruderal.

Ruderal vegetation refers to natural vegetation growing in areas that have been disturbed by humans. (Merriam-Webster 2012).

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-11

The comment states that the print was too small in the appendices and that some pages lacked page numbering.

The appendices provided information to supplement the draft EIR/EIS. In some cases the print size needed to be small to allow printing on a standard 8½ inch by 11 inch sheet of paper. Some documents (e.g., model outputs) do not have page numbering.

As noted in Response to Comment P33-1, the Clearwater Program documents are electronically accessible on the Sanitation Districts' website, the Clearwater Program website, and compact disc. In an electronic format, readers have the ability to zoom in on any page if necessary.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-12

The comment appears to refer to the commenter's oral comments stating that the intersection of Figueroa Street and Harry Bridges Boulevard exists and requesting that the intersection be shown on Figure 18-5 of the draft EIR/EIS.

The title of Figure 18-5 of the draft EIR/EIS was "Cumulative Base (2017) Peak Hour Traffic Volumes." This figure appropriately reflected that the intersection of Harry Bridges Boulevard and Figueroa Street would no longer exist once the planned improvements to the Interstate 110 and C Street interchange were completed. The lane configuration shown on Figure 18-2 of the draft EIR/EIS also appropriately reflected the planned improvements at that location.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-13

The comment states that the intersection of Figueroa Street and Harry Bridges Boulevard exists and requests that the intersection be shown on Figure 18-5. The comment also requests that Table 18-3 and Figure 18-8 be revised because C Street and John S. Gibson Street are parallel streets.

The title of Figure 18-5 of the draft EIR/EIS was "Cumulative Base (2017) Peak Hour Traffic Volumes." This figure appropriately reflected that the intersection of Harry Bridges Boulevard and Figueroa Street would no longer exist once the planned improvements to the Interstate-110 and C Street interchange were completed. The lane configuration shown on Figure 18-2 of the draft EIR/EIS also appropriately reflected the planned improvements at that location.

The comment is correct regarding C Street and Harry Bridges Boulevard being parallel; however, as shown on Figure 18-2 of the draft EIR/EIS, the southernmost segment of Figueroa Street lies between C Street and the intersection of John S. Gibson Street and Harry Bridges Boulevard. Table 18-3 and Figure 18-8 of the draft EIR/EIS are correct as shown.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-14

The comment requests that Pasha Terminal be labeled on the figures in the draft EIR/EIS.

There were in-text references to Pasha Terminal in Chapters 3, 12, 14, 16, 18, and 19 of the draft EIR/EIS. There were no in-text references to Pasha Terminal in Section 19.4.3.1, Pages 19-33 or 20-28. On Figure 21-1, none of the detailed areas within the Port of Los Angeles were labeled directly on the map due its scale. However, in the legend of Figure 21-1, under the Port of Los Angeles Projects,

cumulative Project No. 17 (which was listed as "Berths 171-181, Pasha Marine Terminal Improvements Project") was properly located in Pasha Terminal. Pasha Terminal was shown in greater detail on Figures 12-8 and 12-9. To better locate Pasha Terminal, the following figures are revised for the final EIR/EIS: Figures 18-1, 18-4, 18-7, 18-10, and 19-2.

No other revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-15

The comment expresses disappointment that the Los Angeles Police Department did not provide information about the response times for the Angels Gate and Royal Palms shaft sites.

The information was requested, but neither the Sanitation Districts nor the Corps has the means to compel the police department to provide the information.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-16

The comment suggests that the Clearwater Program publicize new and innovative uses of recycled water.

As described in Appendix 1-B of the draft EIR/EIS, since 2006, the Sanitation Districts conducted over 500 public outreach meetings with public officials; civic and community groups; businesses; environmental organizations; news media; and various local, state, and federal agencies. This effort facilitated a productive exchange of information and ideas between the Sanitation Districts and stakeholders regarding all components of the Clearwater Program, including reuse opportunities for recycled water.

The Sanitation Districts and Corps recognize that recycled water is an essential regional resource, which is why one of the four primary objectives of the Clearwater Program is to "provide support for emerging recycled water reuse…opportunities." As described in Chapter 1 of the draft MFP, the Sanitation Districts have pioneered water reclamation and reuse in Southern California, beginning with the completion of the Whittier Narrows Water Reclamation Plant in 1962. The Sanitation Districts now own and operate 10 water reclamation plants (WRPs) that produce approximately 165 million gallons per day of high-quality recycled water. Approximately half of the recycled water is reused at over 640 sites throughout Los Angeles County for groundwater replenishment; industrial, commercial, and recreational applications; habitat maintenance; and agricultural and landscape irrigation. This message has been and will continue to be an important component of the Sanitation Districts' public outreach and education efforts.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-17

The comment requests additional information about the bid process, cost overruns, street sweeping, telephone contacts, and graffiti removal.

The project would be competitively bid upon completion of final design. The Sanitation Districts would award the project to the lowest qualified bid for each construction contract.

A contingency consistent with industry standards for a project of this size was applied to the cost estimate to account for possible overruns.

It is the Sanitation Districts' standard practice to require contractors have a motor sweeper on the job site at all times to keep paved areas acceptably clean wherever construction is occurring. In addition, implementing South Coast Air Quality Management District Rule 403 would reduce dust emanating from the job site because watering would occur at least three times a day. As part of the community outreach, a contact number would be established to provide people with a means to express their concerns during construction.

It is also the Sanitation Districts' standard practice to require contractors to remove graffiti within 24 hours of notification. Implementation of Mitigation Measure (MM) AES-1 (same as MM AES-3a), as described in the draft EIR/EIS, would ensure maintenance of the aesthetic treatments by removing graffiti in a timely manner.

No revisions to the draft EIR/EIS are required in response to this comment.

Response to Comment P33-18

The comment asks whether the final EIR/EIS will be available in the local libraries.

The final EIR/EIS is available in hard copy format at the Carson Regional Library, the Los Angeles Public Libraries' San Pedro and Wilmington Branches, and the Sanitation Districts' offices in Whittier. In addition, the final EIR/EIS can be accessed electronically on the Sanitation Districts' website, the Clearwater Program website, or compact disc.

No revisions to the draft EIR/EIS are required in response to this comment.

Chapter 29
CHANGES AND ERRATA

29.1 Introduction

This chapter addresses modifications between the draft EIR/EIS and final EIR/EIS. Modifications in the final document include all revisions related to public comments, updates, and clarifications, as determined necessary by the lead agencies. Section 29.2 references these revisions. None of the revisions result in changes to significance findings from the draft EIR/EIS.

Some of the modifications in the final EIR/EIS are not included in Section 29.2. These changes are discussed below.

In Chapter 1 of the final EIR/EIS, a new Section 1.8 is added to discuss the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) processes since the publication of the draft EIR/EIS, and the subsequent section is renumbered. Appendix 1-B is also revised to include the notices for the availability and completion of the draft EIR/EIS, and other information relevant to the public hearings. Two new chapters are added to the final EIR/EIS. Chapter 28 includes the comments received during the comment period on the draft EIR/EIS and the responses to those comments. Chapter 29, this chapter, presents the changes and errata to the final EIR/EIS. Table 1-4 is modified to include the new Chapters 28 and 29. Also, a new section is added to Chapter 25 to include Chapter 28 references.

In addition, there are new appendices in the final EIR/EIS as follows:

- Appendices 18-C and 18-D include supplemental traffic analyses completed following the publication of the draft EIR/EIS.
- Appendix 24-A includes the draft 404(b)(1) analysis.
- Appendix 28-A contains all written comments received on the draft EIR/EIS, including supplemental material provided by the commenters, and the complete transcripts of the three public hearings held during the comment period for the draft EIR/EIS.

Revisions to tables and figures are not included in Section 29.2; however, revisions are referenced in Section 29.2, and the reader is directed to the revised tables and figures in the final EIR/EIS to view complete errata. As necessary, the word “draft” before EIR/EIS was removed or revised to “final” throughout the document.

It should be noted that nonsubstantive changes that do not alter the meaning of the text, including errors in grammar, punctuation, spelling, and typography, have been corrected for the final documents but are not included in this chapter.

As provided in Section 15088(c) of the CEQA Guidelines, responses to comments may take the form of a revision to a draft EIR or may be a separate section in the final EIR. This chapter complies with the latter

of these two guidelines and provides changes to the draft EIR/EIS. Underlines indicate where additions were made to the original text. Strikeout indicates where the original text was deleted.

29.2 Modifications to the EIR/EIS

Revisions to the text as presented herein are incorporated into the final EIR/EIS. The location of revisions is identified according to section number and/or heading from the draft EIR/EIS; table and figure numbers from the draft EIR/EIS are used where applicable. Readers are referred to the final EIR/EIS to view complete sections.

29.2.1 Executive Summary

The Introduction section, first paragraph, is revised as follows:

> The Clearwater Program is a comprehensive planning effort undertaken by the Sanitation Districts of Los Angeles County (Sanitation Districts). Under the Clearwater Program, ~~Its purpose is to develop~~ a ~~long-range~~ Master Facilities Plan (MFP) was developed for the Joint Outfall System (JOS), a regional wastewater management system serving ~~over~~ nearly 5 million people in 73 cities and unincorporated areas of Los Angeles County. The Clearwater Program MFP includes an evaluation of infrastructure needs and will serve to guide the management and development of the JOS through the year 2050.

The Project-Specific Screening Process section, under Level 4: Feasible Alternatives, is revised as follows:

- **Alternative 1:** Begin at the JWPCP East shaft site (working shaft); then beneath Wilmington Boulevard to the Port of Los Angeles (access shaft at the Trans Pacific Container Service Corporation [TraPac] site and working and/or exit shaft at the former Los Angeles Export Terminal [LAXT] site); through the Southwest Marine shaft site (access shaft); and to the SP Shelf diffuser area approximately ~~10~~12.4 miles offshore (from TraPac) at a depth of 200 feet for a total tunnel length of 14.4 miles. Construction would take approximately 8 years at an estimated cost of $1,360 million.
- **Alternative 3:** Begin at the JWPCP West shaft site (working shaft); then beneath Figueroa Street and South Gaffey Street to the Angels Gate shaft site (access shaft); and to the PV Shelf diffuser area approximately 2.2 miles offshore (from Angels Gate) at a depth of 175 feet for a total tunnel length of 8.6 miles. Construction would take approximately 6.5 years at an estimated cost of $910 million.
- **Alternative 2:** Begin at the JWPCP East shaft site (working shaft); then beneath Wilmington Boulevard to the Port of Los Angeles (access shaft at TraPac; construction shaft at LAXT); through the Southwest Marine shaft site (access shaft); and to the PV Shelf riser/diffuser area approximately 7.2 miles offshore (from TraPac) at a depth of 175 feet for a total tunnel length of 9.2 miles. Construction would take approximately 6.5 years at an estimated cost of $980 million.

The Project-Specific Recommendations section, under Project Costs, is revised as follows:

> The total capital cost ~~and equivalent annual capital cost~~ for the modified ocean discharge system ~~are~~is presented below. Although the project cost would be incurred over multiple years in the future, all amounts shown are in 2011 dollars and include design, construction,

and project management. The anticipated total project cost in 2021 dollars (at the end of construction) is approximately $740,000,000.

The Significant Unavoidable Impacts section, under Greenhouse Gas Emissions, is revised as follows:

Under CEQA, significant and unavoidable greenhouse gas (GHG) impacts would occur during construction and operation of Alternatives 1 through 4. The magnitude of the significance is directly related to the length of the alignment and the duration of construction. Estimates of total metric tons of carbon dioxide-equivalent (CO_2e) emissions range from largest (Alternative 1) to smallest (Alternative 4). Alternative 4 has the smallest GHG contribution of the four alternatives and would be the preferred alternative based on GHG emissions.

The following section is added to the final Executive Summary after the Environmentally Preferred and Superior Alternative section:

Areas of Controversy and Issues To Be Resolved

CEQA requires that an Executive Summary include a brief summary of areas of controversy known to the lead agency and issues to be resolved. The areas of controversy known to the Sanitation Districts and Corps include potential impacts of tunneling (paleontology, geology, hazards, and noise/vibration), potential impacts near the shaft sites during construction (aesthetics, air quality, geology, GHGs, noise/vibration, and traffic), potential impacts during rehabilitation of the existing ocean outfalls (marine environment), and selection of Alternative 4 as the recommended alternative. These issues are fully discussed in Chapter 28 of the final EIR/EIS. Issues that have yet to be resolved include the potential impacts of various program-wide elements of the Clearwater Program that have not been developed enough to allow for project-specific analysis. These issues, identified in the final EIR/EIS, will be addressed as necessary in supplemental environmental documents prior to implementation of the program-wide elements.

The Table of Significant Impacts and Mitigation Measures (Program-Wide) is revised for Mitigation Measure (MM) AQ-2a as shown in Section 29.2.5.

The Table of Significant Impacts and Mitigation Measures (Program-Wide) is revised for MM NOI-4b as shown in Section 29.2.9.

The Table of Significant Impacts and Mitigation Measures (Project-Specific), under MM AES-3b, Project Alternative 3, is revised as follows:

Angels Gate Shaft Site – ~~SU~~LTS/M

The Table of Significant Impacts and Mitigation Measures (Project-Specific), under MM AES-3b, Project Alternative 4, is revised as follows:

Royal Palms Shaft Site – ~~SU~~LTS/M

The Table of Significant Impacts and Mitigation Measures (Project-Specific) is revised for MM AQ-2a as shown in Section 29.2.5.

The Table of Significant Impacts and Mitigation Measures (Project-Specific), under Greenhouse Gas Emissions, is revised to include MM GHG-1f, MM GHG-1g, and MM GHG-1h as shown in Section 29.2.7.

The Table of Significant Impacts and Mitigation Measures (Project-Specific) is revised for MM NOI-1b (same as MM NOI-4b) as shown in Sections 29.2.9.

29.2.2 Chapter 1, Introduction

Table 1-3 is revised to include entries for the federal Migratory Bird Treaty Act, 1918, and the City of Rancho Palos Verdes General Plan/Environmental Impact Report, 1975.

29.2.3 Chapter 2, Existing Facilities

Section 2.2.4.3, under JWPCP Effluent Management, last paragraph, is revised as follows:

> The pesticide, dichlorodiphenyltrichloroethane (DDT), was manufactured at the Montrose Chemical Corporation plant in Torrance, California, from 1947 through 1983. From ~~the late 1950s to the early 1970s~~1947 to1971, DDT was disposed of into Sanitation Districts' sewers and conveyed to the JWPCP. Local industries also discharged polychlorinated biphenyls (PCBs) into the Sanitation Districts' sewer system until PCBs were banned in 1976. The JWPCP had no means of removing or containing the DDT or PCBs, which were discharged along with the plant's effluent into the Pacific Ocean approximately 1.5 miles off White Point on the Palos Verdes Shelf. Since the 1970s, the contaminated sediment has been gradually buried by plant effluent and natural sediment, resulting in a layer of cleaner sediment on top of the contaminated sediment. In 1997, the Sanitation Districts entered into a consent decree with the EPA to address DDT/PCB contamination on the Palos Verdes Shelf. The EPA has conducted various studies and investigations to determine the extent of the contaminated area and to evaluate the appropriate remediation measures. In June 2009, the EPA released for public comment their proposed plan to address risks to human health and the environment posed by the contaminated sediment. The proposed plan presented the EPA's preferred alternative, as well as the other alternatives the EPA evaluated to address these risks. On September 30, 2009, the EPA signed an interim record of decision that selected an initial remedial action for the Palos Verdes Shelf of capping, monitored natural recovery, and institutional controls. The cleanup decision will be documented in a record of decision, supported by the EPA's remedial investigation/feasibility study.

29.2.4 Chapter 3, Alternatives Description

Section 3.3.2.1, last paragraph, is revised as follows:

> Two types of TBMs could be used to build the tunnel: earth-pressure balance (EPB) or slurry. These TBMs differ in how the excavated material generated from the tunneling operations is handled, transported, and treated~~removed~~. With an EPB TBM, locomotives convey the excavated material in rail cars back through the constructed portion of the tunnel to the shaft for removal by crane. The excavated material would be retained at the surface to allow any water to separate before removal. With a slurry TBM, a slurry is supplied by pipe from the ground surface of the shaft to the cutterhead of the TBM to suspend the excavated material, which is then~~the excavated material would be blended with a slurry mixture and~~ pumped back to the shaft and up to the surface through pipes. In this case, the excavated

material would be processed at a slurry separation plant at the surface of the shaft site prior to disposal. A bentonite additive is used in the slurry TBM method, which may preclude ocean disposal of the excavated material. For the purposes of evaluating the greatest potentially significant environmental impacts, the tunnel construction was analyzed assuming either an EPB TBM or~~the use of~~ a slurry TBM, depending on the resource area.

Section 3.3.2.3, under Diffuser, second paragraph, is revised as follows:

If the diffuser were constructed of steel or RCP, the diffuser would consist of two legs oriented out of the riser head, 120 or 180 degrees apart. Each leg would be approximately 4,000 feet long. The inner diameter of the steel or RCP diffuser would incrementally decrease in size ranging from approximately 132 inches to 48 inches. Installation of the steel or RCP diffuser would require seafloor grading and possibly trenching or dredging for site preparation purposes. The ~~dredged~~ trenched materials would be sidecast, if feasible. The diffuser installation may also require construction of a roadbed base of ballast rock that would be approximately 25 to 54 feet wide and up to 5 feet thick~~deep~~. The roadbed would be placed either in the trench or on the graded seafloor. The diffuser would be placed on the roadbed with additional ballast rock up to the center of the pipe for stability. The riser and diffuser would cover a seafloor area of approximately 5 to 10 acres, depending on the required roadbed depth. Refer to Section 3.3.2.4 for the estimated quantities of dredged materials and ballast rock for the steel or RCP diffuser.

Section 3.3.2.3, under Existing Ocean Outfalls, second paragraph, is revised as follows:

Alternatives 1 through 4 (Project) would include improvements to the existing ocean outfalls, such as joint repairs and re-ballasting. The re-ballasting work would occur on the existing 72-, 90- and 120-inch outfalls in water depths ranging from approximately 20 to 50 feet. A small derrick barge would be used to place the ballast rock around the outfalls and support the joint repair work. Joint repairs would involve temporarily removing some of the existing ballast rock from around the outfall to fully expose the joint being repaired. A team of divers would repair an estimated 10 to 40 joints and hand-shovel approximately 2 cubic yards of sediment from each joint. Mechanical dredging would not be required. A coupling, which is a giant clamp that wraps around the joint, would be installed and the annular space filled with concrete. The sediment and existing ballast rock would be replaced around the pipe, and additional ballast rock would be placed as needed. ~~c~~Cathodic protection would also be restored or added where necessary. The marine vessels required for this work are listed in Table 3-10. The majority of the construction work would be based on one 10-hour shift per day, 5 days per week. It is estimated that approximately eight to ten construction workers would be needed for the rehabilitation work. Joint repairs and transport of construction workers would require a work vessel and crew vessel operating one daily round-trip for approximately 1 month, which would most likely deploy from the Port of Los Angeles. All of the work including mobilization, construction, and demobilization would take approximately 9 months.

Section 3.4.1.1 is revised as follows:

At the program level, Alternative 1 would include conveyance improvements; plant expansion at the SJCWRP; process optimization at the SJCWRP, POWRP, LCWRP, and LBWRP; WRP effluent management at all the WRPs; and solids processing, biosolids management, and effluent management at the JWPCP. At the project level, Alternative 1

would include the Wilmington to SP Shelf tunnel alignment; the JWPCP East, TraPac, LAXT, and Southwest Marine shaft sites; the SP Shelf riser and diffuser area; and the rehabilitation of the existing ocean outfalls.

29.2.5 Chapter 5, Air Quality

Section 5.4.3.1, under Impact AQ-2, CEQA Impact Determination, Mitigation, is revised as follows:

> Mitigation measures for construction were derived, where feasible, from SCAQMD mitigation measure tables (SCAQMD 2007b), LAHD Construction Guidelines (also part of the Port of Los Angeles' Clean Air Action Plan), and the Sanitation Districts. The following mitigation measures would be implemented at the start of the construction activity to reduce criteria pollutant emissions associated with construction.

MM AQ-2a is revised in Section 5.4.3.1, Impact AQ-2, CEQA Impact Determination, Mitigation, Program; and Tables 5-36, 5-43, 5-51, 5-59, and 5-62, as follows:

> **MM AQ-2a.** All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than ~~26,000~~14,000 pounds will ~~include a particulate matter trap or~~ have a 2007 model year engine or newer, or be equipped with a particulate matter trap.

MM AQ-3a (same as MM AQ-2a) is revised in Tables 5-38, 5-44, 5-52, and 5-60 as follows:

> MM AQ-3a (same as MM AQ-2a). All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than ~~26,000~~14,000 pounds will ~~include a particulate matter trap or~~ have a 2007 model year engine or newer, or be equipped with a particulate matter trap.

The legend on Figure 5-19 is revised.

29.2.6 Chapter 7, Cultural Resources

Section 7.2.1.6, second paragraph, is revised as follows:

> Shipwrecks off the Southern California coast, in varying states of preservation, represent hundreds of years of history because of the lengthy Southern Californian coast historical maritime period. It has been estimated that there are "upwards of 100 wrecks in the harbors [Los Angeles and Long Beach], which vary in age from significant old wrecks to culturally insignificant modern wrecks" (Weinman and Stickel 1978:76). Approximately 415 vessel losses have been reported within Los Angeles County by the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE), and 156 vessel losses have been identified within Los Angeles County by the California State Lands Commission (CSLC) database (see Section 7.4.1.2 for more information on each of these databases). Only a small fraction of these wrecks has ever been located. A number of reported vessels lost off Los Angeles County are reported to be in excess of 400 feet in length and are primarily freighters and tankers (CSLC 2011). Title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the state and under the jurisdiction of the CSLC.

Sections 7.4.3.2, 7.4.4.2, 7.4.5.2, 7.4.6.2, under Impact CUL-3, CEQA Impact Determination, Residual Impacts, first paragraph, are revised as follows:

> MM CUL-3 would apply to the disturbance of the ~~upper 10 to 15 feet of~~ natural sediment at each shaft site construction area during the use of conventional excavation ~~construction~~ equipment. However, once the shaft ~~construction extends past 15 feet,~~ has been excavated to depths below the groundwater table, conditions would limit effective monitoring and recovery of paleontological resources, and there would be no feasible way to apply MM CUL-3. Furthermore, MM CUL-3 could not be applied during construction of the tunnel. This is because the TBM continually moves forward and offers no opportunity for appropriate monitoring for paleontological resources.

29.2.7 Chapter 9, Greenhouse Gases

Sections 9.4.3.1, 9.4.4.1, 9.4.5.1, and 9.4.6.1, under Impact GHG-1, CEQA Impact Determination, Mitigation, are revised as follows:

> Some mitigation measures that reduce criteria pollutants may also reduce GHG emissions. Therefore, implementation of the following mitigation measures, including those defined in Chapter 5, may ~~also~~ reduce GHG emissions.

MM GHG-1a is revised in Section 9.4.3.1, Impact GHG-1, CEQA Impact Determination, Mitigation, Program; and Tables 9-10, 9-15, 9-20, 9-25, and 9-27; as follows:

> **Mitigation Measure (MM) GHG-1a (same as MM AQ-2a).** All on-road heavy-duty diesel trucks used during construction with a gross vehicle weight rating greater than ~~26,000~~14,000 pounds will ~~include a particulate matter trap or~~ have a 2007 model year engine or newer, or be equipped with a particulate matter trap.

Section 9.4.3.1, Impact GHG-1, CEQA Impact Determination, Mitigation, Project; and Tables 9-10, 9-15, 9-20, 9-25, and 9-27 under project mitigation measures for Impact GHG-1; are revised to include additional mitigation measures as follows:

> **MM GHG-1f.** Use energy efficient lighting systems, such as LED technology, during construction, where feasible.
>
> **MM GHG-1g.** Use lighter-colored pavement during construction, where feasible.
>
> **MM GHG-1h.** Recycle construction debris to the maximum extent feasible.

Sections 9.4.4.1, 9.4.5.1, and 9.4.6.1, under Impact GHG-1, CEQA Impact Determination, Mitigation, Project, are revised as follows:

> Implement MM GHG-1a (same as MM AQ-2a), MM GHG-1b (same as MM AQ-2b), MM GHG-1c (same as MM AQ-2d), MM GHG-1d (same as MM AQ-2f), ~~and~~ MM GHG-1e (same as MM AQ-2g), MM GHG-1f, MM GHG-1g, and MM GHG-1h.

29.2.8 Chapter 13, Marine Environment (Marine Hydrology, Water Quality, Biological Resources, Noise, and Public Health)

Section 13.2.2.1, under San Pedro Shelf, Sediment Quality, second paragraph, is revised as follows:

> The SP Shelf diffuser area is not located within the boundaries of the United States (U.S.) Environmental Protection Agency (EPA)–designated DDT/PCB contaminated sediment study area, which is shown on Figure 13-4. DDT and PCBs have been reported in sediments from the SP Shelf, with higher levels of DDT and PCB found closer to the Palos Verdes Peninsula (Eganhouse and Venkatesan 1993; Schiff et al. 2006). In regional sampling conducted in 2003, DDT was detected in sediments of three midshelf depth stations on the SP Shelf, Stations 4026, 4058, and 4122 (Schiff et al. 2006). At the two stations closer to the PV Shelf (Stations 4026 and 4122), DDT levels exceeded the ERL[1] value, but were below the ERM[2] value for total DDT, a range in which effects on biota could occasionally occur. At those same two stations, PCBs were also detected in the sediments, though levels did not exceed ERL values.

Section 13.2.2.1, under Palos Verdes Shelf, Sediment Quality, is revised as follows:

> The PV Shelf includes 19,895 acres between the depths of 100 and 400 feet (30 and 120 meters), generally considered midshelf depths. Soft-bottom sediments are approximately 97 percent of the midshelf depths. The PV Shelf riser and diffuser area is within the boundaries of the EPA-designated Palos Verdes Shelf Superfund Site. The location of the DDT/PCB study area is depicted on Figure 13-4. The extent of the DDT contamination within the PV Shelf Superfund Site Study Area (EPA 2009a:27–28) and the proposed riser/diffuser and re-ballasting locations are shown on Figure 13-7. The extent of the PCB contamination within the PV Shelf Superfund Site Study Area (EPA 2009a:27–28) and the proposed riser/diffuser and re-ballasting locations are shown on Figure 13-8. See the discussion under Existing Ocean Outfalls for more details regarding the DDT/PCB on the PV Shelf, and refer to Appendix 13-A for levels of sediment contamination.

Section 13.2.2.1, under Existing Ocean Outfalls, Location and Geography, is revised as follows:

> The existing ocean outfalls extend from the existing manifold structure at Royal Palms Beach and terminate at a depth of approximately 200 feet (60 meters) as described in Section 2.2.4.3. The ~~rehabilitation work~~ proposed re-ballasting would occur along the existing ocean outfalls at depths of 20 to 50 feet as shown on Figures 13-4, 13-7, and 13-8.

Section 13.2.2.1, under Existing Ocean Outfalls, Biological Resources, Marine Vegetation, is revised as follows:

> Giant kelp beds occur inshore of the existing ocean outfalls, though the sizes of the beds have changed over time. Historic trends for kelp beds in the area of the existing ocean outfalls are presented in Appendix 13-A. In 2008, approximately 150 acres of kelp were reported in the White Point area~~.~~ at water depths ranging from approximately 40 to 70 feet. Areas shoreward

[1] ERL – Effects Range Low; concentrations equal to and above the ERL but below the ERM represent possible effects range within which effects to biota could occasionally occur.
[2] ERM – Effects Range Median; concentrations above the ERM represent a probable effects range within which effects could frequently occur.

of 40-foot depths do not support kelp due to wave action, sea urchin grazing, and the absence of hard substrate. There is no eelgrass located at the existing ocean outfalls or within the general vicinity of the existing ocean outfalls. Eelgrass is usually found at depths between +6.0 and -22.0 feet mean lower low water level (MLLW) (+2.4 and -6.6 meter MLLW) (Phillips 1984:4).

Section 13.4.3.2, under Impact MAR-1, Riser/Diffuser Area – San Pedro Shelf, Construction, CEQA Analysis, fifth paragraph, is revised as follows:

If the diffuser were constructed of steel or RCP, it would have two legs oriented out of the riser head, 120 or 180 degrees apart, with each leg approximately 4,000 feet long. The inner diameter of the steel or RCP diffuser would incrementally decrease in size from approximately 132 inches to 48 inches. The steel and RCP diffuser configurations are shown on Figure 3-25. Installation of the steel or RCP diffuser would require seafloor grading and possibly trenching or dredging for site preparation. The trenched~~dredged~~ materials would be sidecast, if feasible. Sidecasting involves excavating seafloor sediments from the construction site with a clamshell dredge, raising and moving the clamshell away from the excavation site and releasing the sediments above the seafloor. The diffuser installation could also require construction of a roadbed base of ballast rock. The roadbed would be placed either in the trench or on the graded seafloor. The diffuser would be placed on the roadbed with additional ballast rock up to the center of the pipe for stability. The riser and diffuser would cover a seafloor area of approximately 5 to 10 acres, depending on the required roadbed width.

Section 13.4.3.2, under Impact MAR-4, Riser/Diffuser Area – San Pedro Shelf, Construction, CEQA Analysis, Marine Habitat, after the first paragraph, is revised with the addition of the following paragraph:

As discussed in Section 13.2.2.1, kelp can be found in the White Point area at water depths ranging from approximately 40 to 70 feet. The proposed re-ballasting work would occur at water depths ranging between approximately 20 and 50 feet. Thus, there would be some overlap between the general work area and the kelp habitat from approximately 40 feet to 50 feet. As a result, re-ballasting activities could impact kelp growing on the outfall pipes and the adjacent rock ballast. However, the impact would be minimized because the proposed method of placing the new ballast rock ensures that the work would be limited to the existing footprint of the outfalls (i.e., pipeline and adjacent rock ballast). The impact would also be temporary because kelp would be able to recolonize the rock ballast upon completion of construction. Furthermore, replacement of rock ballast would increase hard substrate and thus benefit benthic habitat. Overall, direct and indirect impacts on kelp forests would be minimal and temporary. Therefore, impacts would be less than significant.

Figure 13-4 is revised to include the location of the proposed re-ballasting of the existing ocean outfalls. Figures 13-7 and 13-8 are added, and Figures 13-7 and 13-8 of the draft EIR/EIS are renumbered to Figures 13-9 and 13-10, respectively.

All references to “EPA 2009” are relettered to “EPA 2009b”.

29.2.9 Chapter 14, Noise and Vibrations (Terrestrial)

MM NOI-4b is revised in Section 14.4.3.1, Impact NOI-4, CEQA Impact Determination, Mitigation; and Tables 14-26 and 14-37, as follows:

MM NOI-4b. Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents ~~living~~ in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.

MM NOI-1b is revised in Tables 14-27, 14-28, 14-33, and 14-36, as follows:

MM NOI-1b (same as MM NOI-4b). Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents ~~living~~ in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.

29.2.10 Chapter 17, Recreation

MM REC-1b is revised in Section 17.4.5.2, Impact REC-1, CEQA Impact Determination, Mitigation; and Tables 17-5, 17-6, and 17-8; as follows:

MM REC-1b (same as MM NOI-4b). Prior to construction, initiate a complaint/response tracking program. A construction schedule will be made available to schools, child care facilities, and residents ~~living~~ in the vicinity of the construction areas, and a noise disturbance coordinator will be designated. The coordinator will be responsible for responding to complaints regarding construction noise, will determine the cause of the complaint, and will ensure that reasonable measures are implemented to correct the problem when feasible. A contact telephone number for the noise disturbance coordinator will be conspicuously posted on construction site fences and will be included in the notification of the construction schedule.

29.2.11 Chapter 18, Transportation and Traffic (Terrestrial)

Section 18.4.1.1, Baseline, CEQA Baseline, second paragraph, is revised to add footnote "1" to the end of the paragraph:

[1] A supplemental traffic analysis was also completed to determine if impacts would be different using an existing traffic baseline rather than the future baseline. This supplemental traffic analysis is included as Appendix 18-C. This analysis concluded that the impacts compared to existing traffic were consistent with the impacts compared to the future baseline conditions.

Section 18.4.6.2, under Impact TRT-1, Shaft Site – Royal Palms, Construction, CEQA Analysis, fourth paragraph, is revised to add the following footnote "2" to the end of the paragraph:

[2] Since the time of the project-level traffic analysis of Alternative 4, there was a landslide east of the Royal Palms shaft site that led the city of Los Angeles to close a portion of Paseo Del Mar to through traffic for an indeterminate period. The closure to motorized traffic of the roadway link between Western Avenue and Weymouth Avenue has resulted in localized traffic patterns that differ from those that prevailed when the baseline traffic counts used in the original analysis were collected. Because it is unknown whether this roadway segment would be reopened by the time of construction at the Royal Palms shaft site, an additional traffic analysis was performed to determine whether construction at the shaft site would result in different traffic impacts if Paseo Del Mar remained closed. This additional traffic analysis is included as Appendix 18-D. The analysis concluded that the construction traffic impacts with Paseo Del Mar closed would be consistent with the impacts in the original traffic analysis, and that the impacts at the analyzed intersections would be less than significant. The increase in traffic from the project with Paseo Del Mar closed would not exceed the city of Los Angeles' established thresholds of significance.

Figures 18-1, 18-4, 18-7, and 18-10 are revised to better locate the Pasha Terminal.

29.2.12 Chapter 19, Transportation and Traffic (Marine)

Figure 19-2 is revised to better locate the Pasha Terminal.

29.2.13 Chapter 21, Cumulative and Growth-Inducing Impacts

Section 21.2.2.2, under Alternative 1 Through Alternative 4, Activities for Which No Potentially Significant Cumulative Impacts Would Result, is revised with the addition of the following bullet:

- Concurrent peak day emissions of PM_{10} and $PM_{2.5}$ (combined construction and operational impacts) would not exceed the SCAQMD daily emissions thresholds at any time, as described in Chapter 5.

29.2.14 Chapter 24, List of Federal and State Permits for All Alternatives

Table 24-1 is revised to reletter footnote "a" to footnote "b".

Table 24-1 is revised to add footnote "a" to the first row under United States Army Corps of Engineers and the following addition to the footnote section at the end of the table:

[a] The draft 404(b)(1) analysis is included as Appendix 24-A.

29.2.15 Chapter 25, References

Section 25.1.1 is revised by adding the following references:

City of Rancho Palos Verdes. 1975. City of Rancho Palos Verdes General Plan/Environmental Impact Report. Adopted June 26. As amended through September 13, 1988.

City of Rancho Palos Verdes. 2012. General Plan Update. Available: < http://palosverdes.com/rpv/planning/content/General_Plan_Update.cfm>. Accessed: July 13, 2012.

Section 25.13.1 is revised to reletter printed reference "EPA. 2009" to "EPA. 2009b".

Section 25.13.1 is revised by adding the following reference:

EPA. 2009a. Interim Record of Decision Palos Verdes Shelf Operable Unit 5 of Montrose Chemical Corporation Superfund Site. San Francisco, CA. Prepared by U.S. EPA, Region IX. 27–28 p.

29.2.16 Chapter 26, List of Preparers and Contributors

Section 26.1 is revised to include entries for Grace Chan, Robert Ferrante, Raymond Tremblay, Joseph Houghton, Mark Giljum, and Hannah Thames. Section 26.3 is revised to include entries for Donna McCormick and Ron Bass.